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AMERICAN

DYESTUFF REPORTER

Volume 49 July 11, 1960 No. 14

STUDIES OF WRINKLE RESISTANCE FINISHES FOR COTTON TEXTILES

I—RELEASE OF FORMALDEHYDE VAPORS ON STORAGE OF WRINKLE-RESISTANT COTTON FABRICS

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The evolution of formaldehyde from fabrics treated for wrinkle resistance with several N-methylol finishing agents has been studied and the amounts of formaldehyde released on storage have been quantitatively determined. The effects of processing variables, such as time and temperature of cure, amount and type of finishing agent applied, type of catalyst used and the process wash following curing, have been investigated as related to the amount of formaldehyde produced. Also studied were the principal variables in storage, namely, time and temperature.

The process wash after curing was found to have the greatest effect in reducing the amount of formaldehyde evolved from treated fabrics. It was shown experimentally that this was due to removal of residual catalyst by the wash. An accelerated storage test was used in the determination of formaldehyde evolution and the results were found to have excellent correlation with those of prolonged storage under normal conditions.

INTRODUCTION

IT is estimated that textile finishers are currently treating cotton for crush resistance or "wash-and-wear" at the rate of about three billion yards per year and the volume is rising steadily. With sheets and woven underwear being added to the ever-increasing list of "wash-and-use" items, it is predicted that all but a small portion of the 5.5 billion yards of woven goods for household and garment use will be resin finished in the near future (*1*). For a subject of such great importance to cotton farmer, textile manufacturer and consumer alike, it would seem logical that a tremendous store of information from basic and applied research on this type of finishing would be available. Unfortunately this is not so. Partly this is due to the relative newness of the achievement. Resin finishing itself is only about 30 years old (*2*) and only in the last few years have large amounts of research effort been applied to obtaining "wash-and-wear" finishes for cotton.

Considering the value of the products concerned, only a relatively small amount of fundamental research has been carried out on cotton finishing, compared for example, to the amount done to establish competitive synthetic fibers such as nylon. Probably there is a considerable amount of fundamental data which has not been published and this is especially true of data leading to practical production.

Much research is underway at the Southern Regional Research Laboratory on problems relating to the production of wrinkle-resistant cotton fabrics. One of the objectives of the Laboratory is to increase the utilization of cotton and it is hoped that these investigations will lead to a fuller understanding of the chemistry of textile finishing and facilitate production of better products.

Among investigations which are well underway, or on which reports are being prepared, are fundamental and practical studies on the curing, aftertreatment and storage of wrinkle-resistant cottons. Other reports are planned on "wash-and-wear" cottons as affected by variations in fabric preparation, fabric construction, additives, and catalysts. It is hoped that the studies described in the present series may be of immediate practical interest to the textile finisher.

The present paper is limited to the problem of the release of formaldehyde vapors on storgae of some wrinkle-resistant cotton fabrics. With the constantly growing demand by consumers for "wash-and-use" garments and domestic articles made from wrinkle-resistant cotton, more and more fabric is being treated with N-methylol finishing agents. Often many months pass before a finished fabric reaches the end product and sometimes many more months before the product reaches the consumer. Frequently, storage is in warehouses under unfavorable conditions of humidity and temperature. Mateson (*3*), in a survey of stores in the New York area, describes odor problems which he ascribes to treated fabrics which were insufficiently washed. The problems were particularly acute in air-conditioned stores. Formaldehyde fumes were liberated from treated goods with consequent serious lachrymatory effects. The store personnel blamed air-conditioning "fumes", customers were lost, the sales force disrupted, and other annoying conditions resulted.

Although the problems of formal-

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dehyde evolution from cotton finished with N-methylol wrinkle-resistance agents is obvious to those concerned, there is a scarcity of published data on the subject. Articles by Howard (*4*) and Bacon and coworkers (*5*) mention the problem but relate mainly to methods of determining the formaldehyde, although the latter presents data on finishes using dimethylol ethylene urea (DMEU) and compares products made with different catalysts. The problem of formaldehyde fumes has also been recognized in the patent and industrial technical literature (*6*, *7*, *8*) and efforts have been made to avoid evolution by addition of materials such as dicyandiamide, sodium bisulfite and other formaldehyde acceptors. In some cases, perfumes have been used to mask the odor.

It is the purpose of the present study to investigate the evolution of formaldehyde vapors from cotton finished with a number of N-methylol finishing agents and catalysts, and in particular, to show the importance of the process wash in the control of the evolution. In the present study cotton treated with five N-methylol finishing agents, using three common commercial catalysts, has been used to determine conditions of formaldehyde evolution. Studies to be published later include the effects of some additives and of the effects of storage on chlorine retention.

CHEMICAL BACKGROUND—— The reaction of N-methylol finishing agents with cotton cellulose is an acid-catalyzed, reversible reaction:

$$\text{N-CH}_2\text{OH} + \text{Cell-OH} \underset{\text{H}^+}{\overset{\text{H}^+}{\rightleftharpoons}} \text{N-CH}_2\text{-O-Cell} + \text{H}_2\text{O}$$

The reaction is driven to the right by heat during curing. Failure to wash after curing leaves residual traces of acidic catalyst in the product. Under warm, humid conditions, the presence of this acidic material causes reversal of the finishing reaction through hydrolysis and formaldehyde is released by decomposition of the methylol substituent as follows:

$$>\text{N-CH}_2\text{-O-Cell} + \text{H}_2\text{O} \xrightarrow{\text{H}^+} >\text{NH} + \text{HCHO} + \text{Cell-OH}.$$

The amide formed is then available for reaction with the chlorine bleach used in laundering. Degradation of cloth, caused by hydrolysis of the chloramide to form acid during ironing, has been discussed in detail in other articles. With some finishes, as with triazones (*9*), chlorine retention may not be a serious matter; however, release of formaldehyde vapors with all these finishes is unpleasant.

TABLE I

Finishing agents used in determining evolution of formaldehyde

Abbr	*Finishing Agent*	*Solids conc in pad bath %*	*Approx dry add-on %*	*Approx N content %*
UF	Urea-formaldehyde (Ratio 1:1.6)	14	10.0	3.1
DMEU	Dimethylol cyclic ethyleneurea	9	4.2	1.4
DMET	Dimethylol ethyltriazone	9	5.0	1.2
DMP	Dimethylol hexahydropyrimidinone	7.5	3.5	1.0
MMF	Methylated trimethylolmelamine	9	6.3	2.3

MATERIALS AND METHODS

The fabric used was a desized, caustic-boiled and bleached, 80 × 80 white cotton print cloth, 3.2 oz/sq yd. Treatment of the fabric was carried out by immersing it in a solution of the finishing agent plus catalyst, squeezing with pad rolls to about 75% wet pickup, mounting the wet fabric at original dimensions on pin frames, drying for seven minutes at 60°C, and curing for three minutes at 160°C. The finishing agents used are shown in Table I.

Three catalysts were used with each of the finishing agents. Zinc nitrate was used as 0.5% of the bath concentration, magnesium chloride as 16% of the finishing agent solids concentration, and an alkanolamine hydrochloride as 3.5% of the finishing agent solids concentration.

After the curing step, some samples, as noted in the text, were given a process wash in an automatic home washer with a solution of approximately 0.03% of nonionic detergent of the alkylarylpolyether alcohol type. Washing was at 100°F using the "modern fabrics" cycle. The samples were then tumbled dry in an automatic dryer and air-equilibrated. Some samples were not process washed but were tested in the unwashed state.

In previous work, Bacon and coworkers (*5*) determined the formaldehyde evolved by storing samples in sealed jars for several weeks at 40°C using glycerine solutions to obtain various humidities as well as to absorb the formaldehyde. Smith, in his study of storage and chlorine retention (*10*), accelerated the decomposition by using a temperature of 80°C for 16 hours in an oven provided with a beaker of water to maintain a high humidity. Roth (*6*) stored samples over water for 20 hours at 100°F in sealed bottles and determined the formaldehyde absorbed in the water layer.

In the present work, formaldehyde released by the fabric was collected by storing an eight-gram sample of the treated cloth in a sealed, pint size, all-glass Mason jar with a small vial containing 10 ml of distilled water. Jars with zinc-plated lids could not be used because a reaction occurs between the metal and the formaldehyde. The jars were stored in mechanical convection ovens for the times and at the temperatures indicated in the text. After this storage period, the jars were removed from the oven and allowed to cool to room temperature. The formaldehyde absorbed by the water in the vial, together with that rinsed from the sides of the jar, was determined separately from that rinsed from the fabric with three 50-ml distilled water washings. A fourth wash was found to increase the total of formaldehyde only 2%, so three washings were used as a standard procedure.

Formaldehyde was determined by the colorimetric method of Bacon and coworkers (*5*). In this method aqueous formaldehyde solutions are reacted with phenylhydrazine hydrochloride and potassium ferricyanide and the color developed with sodium hydroxide. The formaldehyde content of an aliquot is determined with a spectrophotometer from the percent transmission at a wavelength of 515 millimicrons. The formaldehyde is reported on the basis of parts per million parts of fabric (ppm).

In most of the accelerated storage tests, for convenience, 16 hours and 80°C were selected as test conditions. Apparently the formaldehyde collected was not oxidized under these conditions because no appreciable quantity of formic acid could be detected. Little loss of formaldehyde occurred during the storage period due to leakage or the techniques of handling. When a solution with the equivalent of 9,630 ppm was stored and reanalyzed, 9,490 ppm were recovered. Reproducibility was fair considering the variables of curing and washing. With two samples prepared in a similar manner, 1,070 and 1,310 ppm, respectively, were absorbed in the vial and 1,550 and 1,510

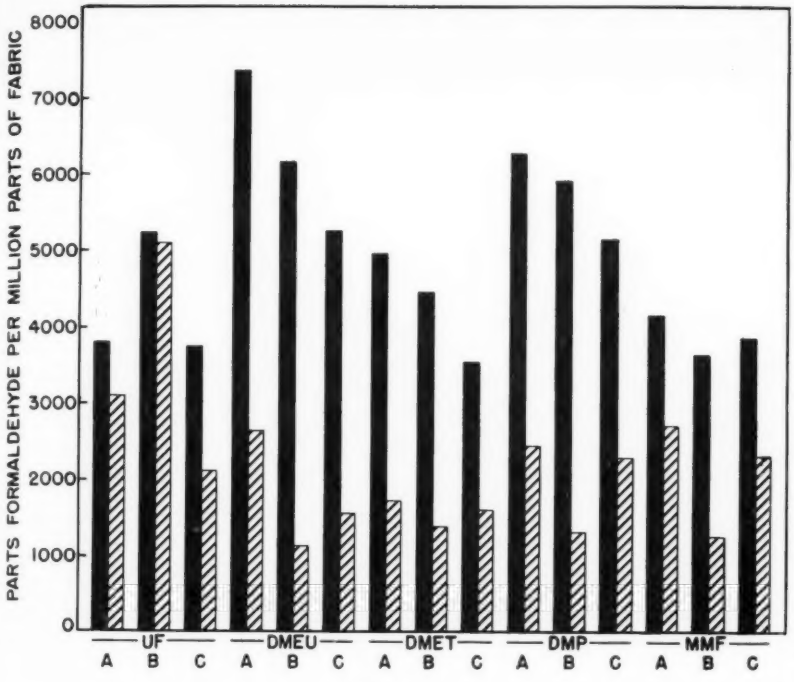

Figure 1

Bar graph showing total formaldehyde evolved in an accelerated test of unwashed samples (solid bars) and washed samples (striped bars) of fabric treated with various finishing agent-catalyst systems. A, B, and C indicate zinc nitrate, magnesium chloride, and alkanolamine hydrochloride catalyst, respectively.

ppm were found in the washes. When the rinsing procedure was used on a sample of washed and unwashed treated fabric which had not been incubated, formaldehyde determined was only 140 and 560 ppm respectively.

RESULTS AND DISCUSSION

Fifteen samples of fabrics treated with all the combinations of finishing agents and catalysts, as shown in Table II, both afterwashed and not, were submitted to an accelerated storage test for 16 hours at 80°C and 100% relative humidity. The formaldehyde evolved and caught in the vial of water as well as that recovered by washing the jar and fabric was determined.

The results are given in Table II and the total formaldehyde evolved from the finished fabrcs is illustrated graphically in Figure 1. The large reduction in formaldehyde evolved after washing is readily noted. Except with UF, the reduction is approximately 50% or greater. In the case of fabric finished with DMEU using magnesium chloride as catalyst, the formaldehyde from the unwashed fabric is five and one-half times greater than that from the washed fabric.

These data show that the relative order of formaldehyde evolution was constant from fabrics treated with the three modified ureas (DMEU, DMET, and DMP) with each of the three catalysts. In the washed set, this order for the catalysts used was $Zn(NO_3)_2 > RNH_2.HCl > MgCl_2$, while that for the unwashed set was $Zn(NO_3)_2 > MgCl_2 > RNH_2HCl$. Fabrics treated with UF and with MMF do not follow this pattern and are different from each other.

Table II aso shows averages of the formaldehyde evolved from fabric samples treated with the same finishing agent, regardless of catalyst used, for the washed and unwashed sets. Similarly, averages were calculated for treated samples in which the catalyst was common. By obtaining these values it was possible to summarize the effects of the finishing agent and the catalyst on the amount of formaldehyde evolved by the fabrics.

These data show that, in the unwashed fabric, DMEU and DMP evolve the most formaldehyde. The remaining three agents are approximately equal in the tendency. This finding correlates with the relative degree of acid stability of the finishes (*9, 11*).

In general the formaldehyde evolved from the washed fabric corre-

TABLE II

Formaldehyde evolved in an accelerated storage test of cotton fabrics treated with various finishing agent-catalyst systems[1]

Finishing Agent	Source	*Parts formaldehyde per million parts of fabric* — Not process washed — Catalyst: $Zn(NO_3)_2$	$MgCl_2$	$RNH_2 \cdot HCl$	Average	Process washed — Catalyst: $Zn(NO_3)_2$	$MgCl_2$	$RNH_2 \cdot HCl$	Average
UF	Vial	2870	3510	2790	3056	2120	2210	1370	1900
	Washings	920	1730	940	1197	970	2890	730	1530
	Total	3790	5240	3730	4253	3090	5100	2100	3430
DMEU	Vial	4990	3090	2700	3593	1070	490	680	747
	Washings	2370	3080	2570	2673	1550	630	900	1027
	Total	7360	6170	5270	6266	2620	1120	1580	1773
DMET	Vial	3330	2850	2260	2813	1120	880	1040	1013
	Washings	1640	1590	1300	1510	600	510	580	563
	Total	4970	4440	3560	4333	1720	1390	1620	1577
DMP	Vial	4470	3730	3280	3826	1210	750	1110	1023
	Washings	1820	2200	1890	1970	1250	570	1180	1000
	Total	6290	5930	5170	5796	2460	1320	2290	2023
MMF	Vial	3290	2730	2890	2970	1840	840	1520	1400
	Washings	880	930	980	930	890	430	800	707
	Total	4170	3660	3870	3900	2730	1270	2320	2106
Average	Vial	3790	3182	2784	3252	1472	1034	1144	1217
	Washings	1526	1906	1536	1656	1052	1006	838	965
	Total	5316	5088	4320	4908	2524	2040	1982	2182

[1] Samples were stored at 80°C and 100% relative humidity for 16 hrs in sealed containers.

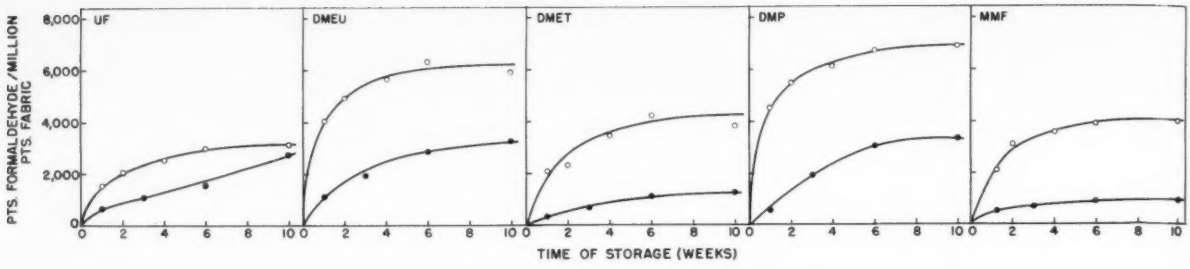

Figure 2
Effect of time of storage at 40°C on total formaldehyde evolved from washed (●) and unwashed (○) cotton fabric with various finishes.

lates with methylol content of the finishing agent applied to the fabrics. The results from fabrics treated with DMP were anomalous, however, in that this reagent has a lower methylol content than DMEU, but the finished fabric evolved more formaldehyde. The relative order of formaldehyde evolved from the washed fabric was not the same as for unwashed samples. The UF-treated fabric evolved the most formaldehyde. It should be noted that this fabric had the highest add-on and formaldehyde content.

The average values obtained for the three catalysts show that differences are not great although, in both the washed and unwashed sets, zinc nitrate causes the greatest evolution followed by magnesium chloride and the alkanolamine hydrochloride. However, examination of the data in Table II shows that in the washed set magnesium chloride ranks third in order of formaldehyde evolution in all but the UF finish, where it causes the greatest evolution. Also it should be noted that these values represent an average of the formaldehyde evolved for all the finishing agents with each of three catalysts; however, with each individual finishing agent there are differences in the formaldehyde evolved if the finish is applied with the various catalysts.

COMPARISON OF ACCELERATED AND NORMAL STORAGE—— Although comparative results obtained using different finishing agents are worthwhile when obtained by an accelerated test method, the true test of validity of results is by comparison with those obtained under actual conditions. It would be impossible, of course, to accurately reproduce storage conditions over the range of temperatures and humidities to be encountered, so unfavorable ones were selected—a temperautre of 40°C (104°F) and 100% relative humidity for 10 weeks. These conditions are quite comparable to daytime warehouse conditions during the summer months in the New Orleans area.

The finishes tested were obtained by treatment with a) UF-$RNH_2 \cdot HCl$; b) DMEU-$Zn(NO_3)_2$; c) DMET-$Zn(NO_3)_2$; d) DMP-$Zn(NO_3)_2$; and e) MMF-$MgCl_2$. They were selected to provide a finish representative of each of the finishing agents with the catalyst commonly used with that particular agent. Samples were stored, both washed and unwashed, in sealed jars as in the accelerated storage, at 40 ± 1°C for periods of time up to 10 weeks. The values of total formaldehyde evolved were plotted against time of storage and the relationships are shown in Figure 2. Again, it can be readily perceived that washing the fabric prior to storage greatly reduces the amount of formaldehyde evolved. Except for the UF samples washed before storage, formaldehyde evolution appeared to approach a maximum after about six weeks of storage. The washed UF sample, however, appeared to evolve formaldehyde at a constant rate throughout the storage period studied.

Figures obtained for formaldehyde evolved in the accelerated test and the 10-week storage test are satisfactorily comparable. The relative ratings of the various finishing agents are fairly close by each method. Figure 3 is a plot of the formaldehyde evolved in the 10-week test against that obtained with the same finishes in the accelerated test. The values for both washed and unwashed samples were plotted.

Through the use of statistical techniques (*12*) the regression coefficient *b* was calculated to be 0.85. The regression line shown in the figure was calculated from the regression formula. This regression analysis shows that the formaldehyde given off in the 10-week test could be fairly accurately predicted from that given off in the accelerated test by means of the following relationship:

$$\text{ppm } CH_2O \text{ (10 wks at 40°C)} = 340 + 0.85 \text{ [ppm } CH_2O \text{ (16 hrs at 80°C)]}$$

VARIABLES AFFECTING FORMALDEHYDE EVOLUTION—— From the data presented it is obvious that the amount of formaldehyde evolved from "wash-wear" fabric is affected by many variables, such as the finishing agent used, the afterwash, and time and temperature of storage. For consideration at this time the variables are divided into two classes: a) variables in the finishing procedures, and b) variables in conditions of storage. For convenience, only the DMEU-$Zn(NO_3)_2$ finish will be discussed. Other variables of both classes exist, however, which were not included in this study because of experimental complications in determination of their effect. Among these are the free formaldehyde content of the pad bath and the relative humidity during storage.

VARIABLES IN FINISHING PROCEDURES——

Residual Catalyst. It is reasonable to belive that the afterwash removes the catalyst, thus reducing reversal of the reaction which produces formaldehyde. This was confirmed by an experiment, the data for which are presented in Table III. A sample of DMEU-treated cloth was divided into three parts after curing. One portion was not washed and two portions were. One of the latter was padded with a 0.5% solution of zinc nitrate, framed and dried at 60°C for seven minutes. Introduction of the catalyst raised the production of formaldehyde from 2,620 ppm to 6,540, which is fairly close to that of the unwashed cloth, 7,360. It is evident then that removal of catalyst is an important factor in reducing the evolution of formaldehyde.

Change in Curing Conditions. It has been shown by several investigators that with DMEU a "hard cure" gives fabric with better characteristics, especially resistance to chlorine

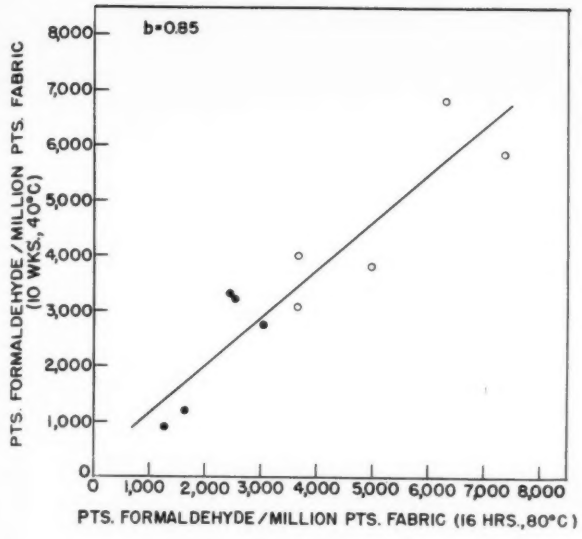

Figure 3

Relation of formaldehyde evolved in prolonged storage, 10 weeks at 40°C, and that evolved in the accelerated test, 16 hours at 80°C. Value for both washed (●) and unwashed samples (○) are plotted.

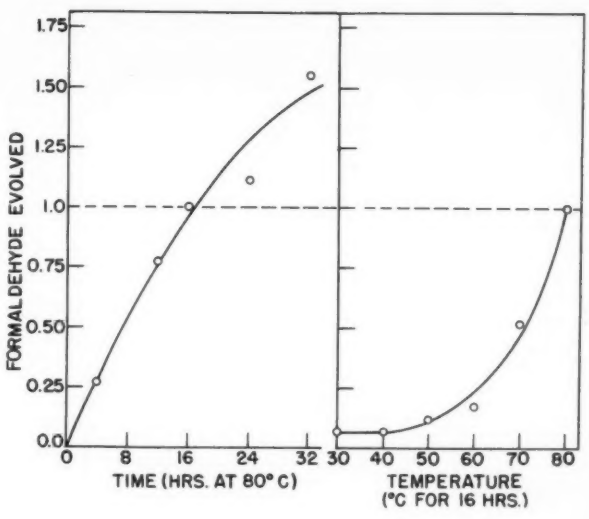

Figure 4

Effect of time and temperature of storage on the amount of formaldehyde evolved from cotton fabric treated with DMEU-$Zn(NO_3)_2$ and process washed. Formaldehyde is expressed as the ratio of amount evolved to that evolved at 80°C for 16 hours.

bleaching. The effect on formaldehyde evolution was investigated using a range of poor, normal, and excessive curing conditions followed by an afterwash. The data are given in Table IV.

The evolutions of 3,420, 2,620 and 1,910 ppm are significantly different, but it is probable that the variation encountered in the usual commercial curing conditions is not an important factor in determining the amount of formaldehyde evolved.

Concentration of Finishing Agent. To demonstrate the effect of concentration on the evolution of formaldehyde, samples were treated with DMEU-$Zn(NO_3)_2$ at three pad-bath concentrations, 6, 9, and 12% DMEU with 0.5% Zn $(NO_3)_2$ catalyst. The samples were dried and cured as before and given a process wash. Under the conditions of the accelerated storage test an increase in the nitrogen content of 32% caused a 60% increase in formaldehyde; and a 32% decrease in nitrogen content caused a 60% decrease in formaldehyde evolution. These data indicate that within this range of concentration the amount of formaldehyde evolved is directly proportional to the amount of finishing agent on the fabric.

VARIABLES IN STORAGE——

Time and Temperature of Storage. The effects of time and temperature of storage are graphically illustrated in Figure 4. The samples used in these experiments were treated with DMEU-$Zn(NO_3)_2$ and were process-washed after curing. The formaldehyde evolved is expressed as the ratio to that evolved at 80°C for 16 hours. It can be seen that, at 80°C, the rate of formaldehyde evolution is practically constant up to 16 hours of storage when it begins to decrease.

The rate of formaldehyde evolution increases gradually from 30° to 60°C, then increases sharply. The amount of formaldehyde evolved at 80°C is twice as great as at 70°C, and more than three times the amount at 60°C.

THRESHOLD LEVEL OF IRRITATION BY FORMALDEHYDE—— Aside from the damage to a crease-resistant cotton, the evolution of fumes of formaldehyde can be a nuisance and a health hazard. Unfortunately, we have no good way of determining the maximum amount of formaldehyde permissable because the evolution occurs during an extended period, changes with ambient weather conditions, and accumulation varies according to the volume of air change with a given quantity of cloth stored. Roth (6) states that fabrics yielding free formaldehyde in amounts in excess of 0.3% based on the weight of the cloth when stored for 20 hours at 100°F and at 100% relative humidity have been determined to be commercially undesirable. Recirculation in air-conditioned stores greatly compounds the irritation. Under practical conditions in air-conditioned department stores, irritation does occur, particularly with unwashed finished cloth. Mateson (3)

TABLE III

Formaldehyde evolved in an accelerated storage test of cotton fabrics treated with DMEU

DMEU-$Zn(NO_3)_2$-treated fabric	After accelerated storage test[b] Parts CH_2O per million parts of fabric: Absorbed in vial	In washings	Total
Not process washed	4990	2370	7360
Process washed	1070	1550	2620
Process washed—catalyst reapplied[a]	4300	2240	6540

[a] The process washed fabric was padded with a 0.5% solution of zinc nitrate, framed, and dried at 60°C for seven min.

[b] Samples were stored at 80°C and 100% relative humidity for 16 hours in sealed containers.

TABLE IV

Effect of the curing conditions on the amount of formaldehyde evolved in an accelerated storage test of DEMU-treated cotton fabric

Curing Conditions[a] Time (min)	Temp (°C)	After accelerated storage test[b] Parts CH_2O per million parts of fabric: Absorbed in vial	In washings	Total
0.5	140	1300	2120	3420
3	160	1070	1550	2620
4	180	1000	910	1910

[a] Cotton fabric treated with DMEU-$Zn(NO_3)_2$. Process washed after curing.

[b] Samples were stored at 80°C and 100% relative humidity for 16 hrs in sealed containers.

states that the concentration of fumes in a store possessing 20 tons of air conditioning and with 2000 square feet of area can approach that found near a tenter frame.

SUMMARY OF PROBLEM OF FORMALDEHYDE ODOR

The problem of formaldehyde fumes from cotton fabrics finished with N-methylol finishing agents is one which should concern all who are interested in the problem of greater utilization of cotton. This includes a wide spectrum of people from the cotton farmer to the chemist who makes the finishing agent and on to the consumer. Mateson (3) comments most emphatically on the fact that small savings made by omitting the afterwash have been known to back-fire and cost thousands to correct.

The yardage of resin-treated cotton is growing by leaps and bounds. The problems of formaldehyde fumes is growing even faster because, where a store could cope with a small amount of fumes, they cannot cope with the vastly increased amount coming from the greater yardage.

From the data determined in this paper it is obvious that potentially large concentrations of formaldehyde can be produced from fabrics treated for crease resistance with N-methylol finishing agents. In view of the relatively low tolerance level for formaldehyde vapors, due care should be exercised to minimize the release of these vapors.

CONCLUSIONS

The evolution of formaldehyde from wrinkle-resistant cotton fabrics has been studied. Included in the study were the finishes obtained by the use of five classes of N-methylol finishing agents with each of three types of catalyst.

Some finishes produce more of a hazard in formaldehyde evolution than do others, and the same is true of certain types of catalysts used. Careful selection of finishing agent and catalyst can minimize this problem. By reapplication of catalyst to a washed wrinkle-resistant fabric, it was shown experimentally that the presence of catalyst greatly increases the evolution of fumes. Probably the most important means of reducing the amount of formaldehyde evolved from finished fabrics is the washing step following curing.

An accelerated storage test was employed. In this test the amount of formaldehyde evolved from fabric samples stored in sealed jars at 80°C for 16 hours was determined and the results were found to have excellent correlation with data obtained on prolonged lower temperature storage. In unwashed samples the amount of formaldehyde evolved is a function of the acid stability of the finish whereas with washed samples, it is related to the methylol content of the finishing agent.

Other factors, particularly the time and temperature of storage, and processing variables such as time and temperature of cure, and amount of finishing agent applied to the fabric, also affect the release of formaldehyde vapors.

The small cost of afterwashing crease-resistant cotton fabrics seems to be outweighed many times by the improvement in properties of the finished product and particularly in the reduction in nuisance and health hazard due to evolution of fumes of formaldehyde. There is a real need for a wrinkle-resistance finish which will not hydrolyze to produce formaldehyde fumes.

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The authors wish to extend their thanks to the following for help in this study: E Fred Schultz Jr, for assistance with statistical interpretations; Harold P Pastor for nitrogen determinations; and George I Pittman for preparing the illustrations.

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Abstracts

Recent Developments in Mothproofing

Moncrieff, R W, *Fibres & Plastics 21*, 109-14 April, 1960

The damage to fabrics caused by the larvae of the common clothes moth *Tineola bisselliella* (Hum.) is still colossal. Control measures are available and some of them are very good, but they are applied to wool on only a limited scale and the clothes moth menace still survives.

The author describes briefly the life history of the clothes moth, and calls attention to a recent article by Hinton which he considers "the most complete description of the structure, nutritional requirements and habits of the larvae that has ever been published."

He states that wool is "by no means an ideal diet" for the clothes moth larvae. They need vitamines of the B complex, he says, for their development, and these they get in sufficiency from urine stains, and probably to some extent from sweat stains also.

He points out that when fur coats are put in cold storage, moth eggs and grubs become dormant but are not necessarily killed, so that when the coats are taken out of storage they may still be infected.

Various substances proposed as mothproofing agents are discussed. Fluorides and silicofluorides applied to wool are usually effective at first but may be lost when the fabric is washed. The same is true of DDT. A method of securing fastness to washing of the mothproofing agent by surrounding it with an insoluble resin has been proposed by Am Cyanamid.

The chemistry and application of Mitin FF (Gy) are described. Mitin is in effect a colorless dyestuff which is substantive to wool and is fast to washing. The author considers that it is still probably the best mothproofing agent yet devised but is relatively expensive to use.

Dieldrin is an insecticide which has been found effective in very low concentrations against moth larvae. It is available to the trade under the name "Dielmoth" (Shell), which is a solution in xylene containing 20% of dieldrin and an emulsifying agent. Its application to wool, preferably at 95°C, is described. If the fabric is to be washed later, the dieldrin content will be gradually reduced. It is, however, quite fast to drycleaning. It is estimated that at present some 15 percent of all the wool used in the United Kingdom is mothproofed with dieldrin.

The author finally discusses several methods for testing the effectiveness of mothproofed wool.

Thirty-one references to the literature are cited.

Proceedings of the
American Association of Textile Chemists and Colorists

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July 11, 1960 No. 14

Delaware Valley Section———

THE PERMACHEM SYSTEM—TOTAL ENVIRONMENTAL CONTROL*

WALTER W BURBANK

Vice president, Permachem Corp, West Palm Beach, Fla

INTRODUCTION

TOTAL ENVIRONMENTAL CONTROL is more than a scientist's dream or an advertising man's promotion. The textile industry can play a major role in protecting man from his environment.

Textile materials have protected man from many elements of his environment from very early times, and it is probable that textile materials will contribute even more to man's health and welfare in the future.

Man and his environment have been in constant battle from the days of the primitive caveman. The cave dweller, and for centuries those that followed him, were subject to diseases against which they had little or no protection. In fact, they didn't even know what they were. As these men moved indoors—into the caves or primitive huts, or even later, into more elaborate structures—man literally fouled his own nest! His only recourse to disease was to idols and false gods created by ignorance and superstition. The black plague of the 15th Century—thanks to environmental dirt and filth—was a calamity to which there was no answer. It has only been in relatively modern times that the discoveries of Lister and Pasteur have made man's enemy—disease—a known adversary. Most efforts were spent fighting this foe (bacteria and fungus) after it had attacked the human body. The assaults were many and the forces to fight them were few. Gradually scientists through long and painful research brought reinforcements to this losing battle against disease. Antibiotics! The antibiotics actively appeared about 25 or 30 years ago and the doctors, particularly the younger doctors, thought that they had the battle against environment and disease won. A shot of penicillin or a shot of one of the so-called wonder drugs and the pathogenic bacteria were licked, but this was not so—as early as 1946 the first uneasy reports were coming out of England that the wonder drugs were not 100% effective. By 1955 we were in real trouble both here and abroad—bacteria developed which were no longer responsive to the antibiotics then in use. The battle has grown more heated! New antibiotics seemed to make some gains and then new strains of bacteria came to the fore with renewed vigor. The attack on man see-saws back and forth, with doctors doing all in their power to beat back each attack as it arises and ravages the patient. Now there is a growing feeling that this preoccupation and concentration on beating back the attacks and assaults of bacteria and fungus in our environment must give way—so more time and skill may be devoted to preventative medicine. More attention must be given towards preventing the inroads of disease from ever being established in the human body.

Once we turn toward preventative medicine the question arises: Where do we prevent? What area demands the greatest concentration? What areas of man's environment are the greatest potential spreaders of disease? The answers to these questions are not precisely known. The knowledge of what causes epidemics or how disease spreads is not an exact science. It is not definitely known whether infection in a hospital is caused by infected patients, infection-bearing staff members, or infectious elements present in the environment; such as the air, furniture, bed linens, blankets, curtains, floors or even the ceilings of the rooms. We can only arrive at one conclusion: to control disease and disease-bearing elements we must have total environmental control. In other words, we must prepare to treat every element in man's environment so that it is not a reservoir of disease, but so it becomes a part of a gigantic killing force to wipe out disease and disease-bearing organisms.

In this battle of man and his environment, no surface, no textile fabric, can be neutral. It is contaminating or it is decontaminating—it is a source of infection or a source of protection. This is a new concept and needs a tremendous amount of study and research to determine the best course to follow.

DISCUSSION

A very real approach has been made to total environmental control in a New York hospital—the Francis Delafield Hospital. I would like to show you some illustrations which I think are interesting because they show what has been done already and the results that have been achieved in the first large-scale efforts to control the entire environment.

As a matter of fact these illustrations are from two hospitals.

*Presented before the Delaware Valley Section on January 22, 1960 at Kugler's Restaurant, Philadelphia, Pa.

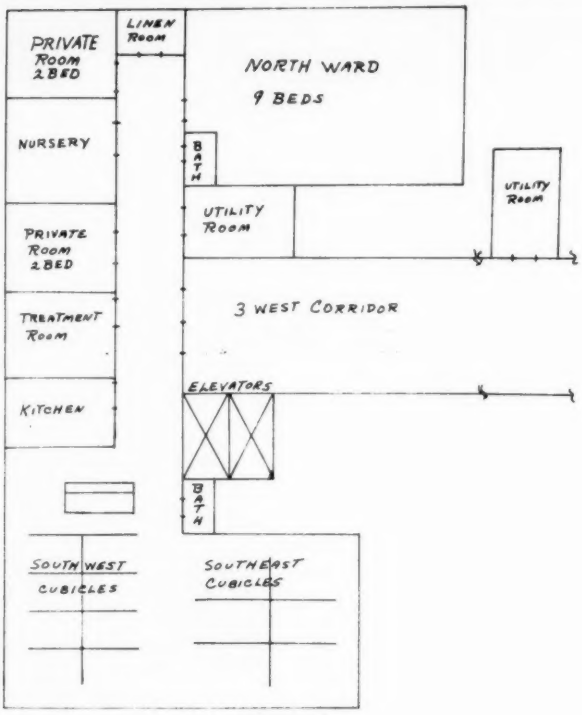


Figure 1

Figure 1 depicts a typical hospital ward. This is a more or less self-contained unit. It is separated from the rest of the hospital at the end of a corridor with closed doors. This wing has a nine-bed north ward. private rooms, a nursery, kitchen, service rooms and a 15- or 16-bed ward (in the lower part).

This ward was, of course, fully occupied during this experiment.

If you are going to show improvement in the environment of a hospital, you have to know the conditions existing before the treatment begins, and to do this the number of bacteria in the air and on the physical surfaces were very carefully established and recorded.

You can see the numbers in the various rooms in Figure 2. Each number indicates the spot that an open Petri dish or culture plate was placed at intervals for a three-day period to collect the bacteria in the largest element of our environment—the air—the cultures were incubated and bacterial colony counts made.

An interesting side light is that all of these dishes are placed at a level of about three to four feet above the floor, because this is the bed level of most patients in hospitals.

In addition to culturing the air, cultures were made from the walls, the floors, the linens, and in every other possible place so a complete "before treatment" pattern of contamination was established.

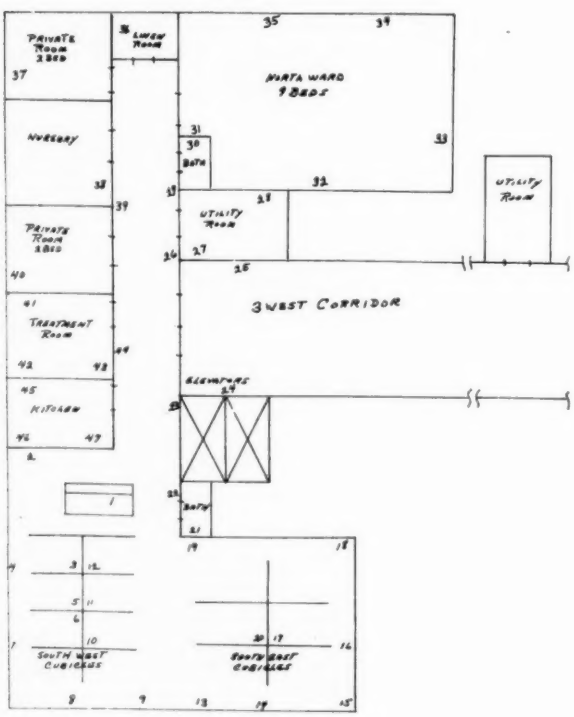


Figure 2

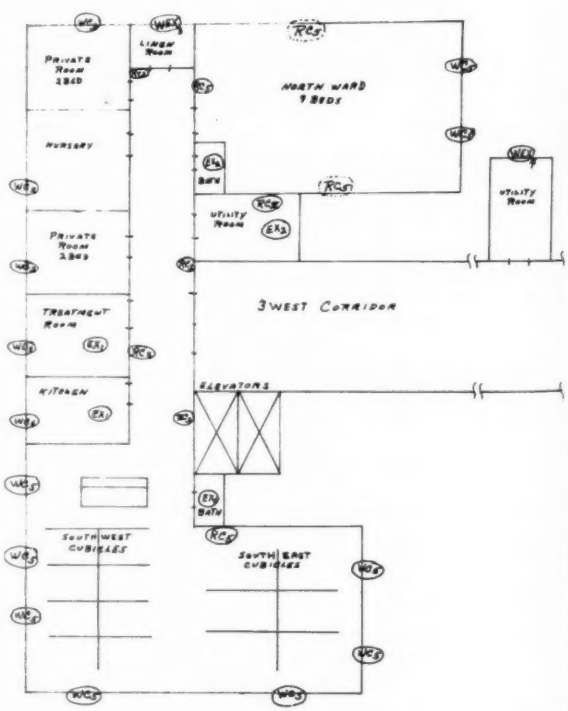


Figure 3

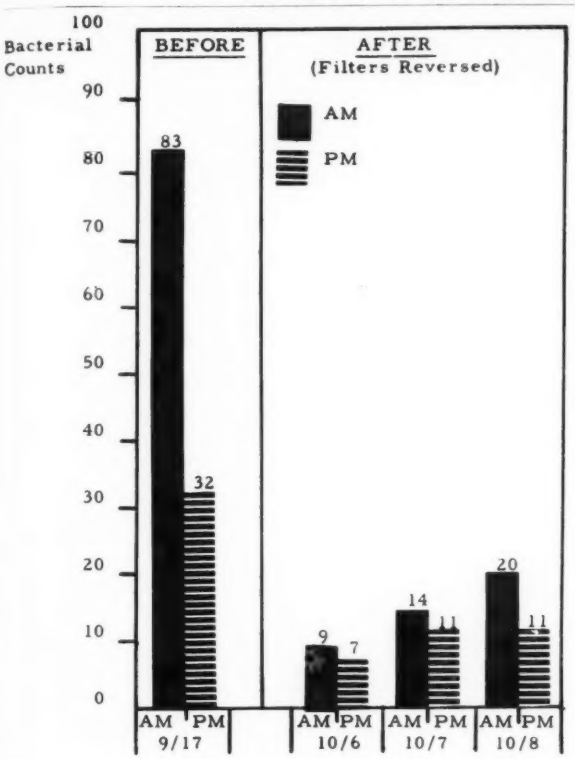


Figure 4

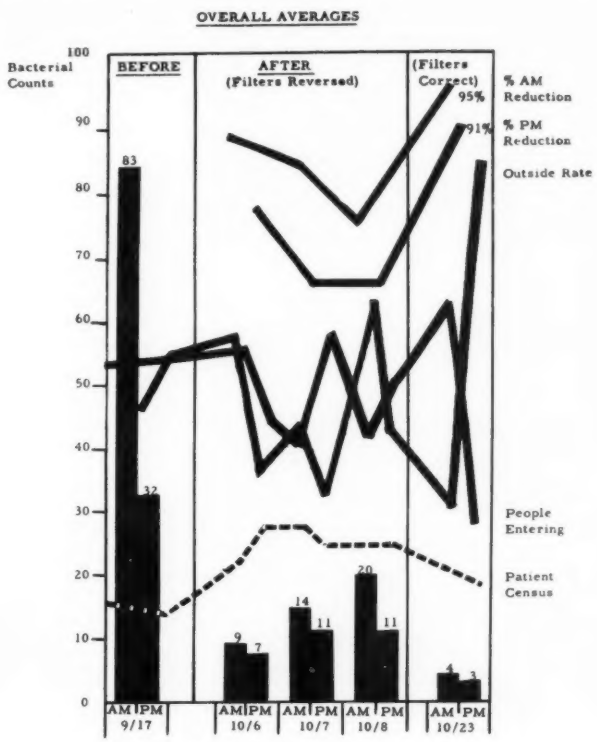


Figure 5

After this was done, the entire hospital was treated with Permachem—a long-lasting durable bactericide and fungicide. (See Figure 3).

The floors, walls, ceilings were treated. Bactericidal waxes were applied to all the furniture, the beds, the chairs, the tables, the medical equipment, all linens, uniforms and clothing. In fact, every surface in the hospital was treated.

The next step was to get the airborne germs in contact with these treated surfaces and to do this fans and air-recirculating units were placed at strategic locations around the hospital as indicated by the circles in each of these rooms.

Figure 4 shows the bacterial colony count with an average of all the cultures taken before any treatment was made. You will note that the morning average of the bacterial colony count is 83 and the afternoon average is 32 colonies. The reason the morning count is so much higher is that that is the time the beds are changed, regular housekeeping chores are done, the doctors make their rounds, examine patients, change dressings and more wounds are open to the air. In general the morning activity is higher than in the afternoon.

After the hospital was treated you will note that the count in the morning was 9 and 7 in the afternoon, but you will also note that on the second day the count rose and on the third day it rose again. At this point there was a great deal of consternation as the rising trend was completely opposite to what we expected. A complete check was made of all of the units involved and it was quickly discovered that the double air filters had been put in backwards and the air circulation was not enough to bring the bacteria in the air in contact with the decontaminating surfaces.

The vertical lines in Figure 5 are the same as those in Figure 4. After the filters were properly installed, the bacteria colony count dropped to 4 in the morning and 3 in the afternoon, as is indicated in the last column.

Figure 5 offers a great deal of information. The line at the top is the percentage average improvement over the untreated areas in the morning. The first day of treatment shows about 85% improvement; the second day the improvement is less because the colony count is up, the third day the improvement is lower still. But after the filters are reversed the bacterial count goes way down and the percentage of improvement reaches 95%.

The next lower line covers the same information for the afternoon with a final improvement factor of 91%. This is very good but skeptics might say "You didn't have as many patients in the ward as you had before treatment". The dotted line shows the patient census, and you can see that the number of patients increased from 17 to over 39 and down to 20 after treatment. The curve bears no relation to the percentage of improvement.

Other "Doubting Thomases" might say: "You had less visitors to carry outside bacteria into the ward". Another line, which shows the number of visitors each day, shows it has no effect on the improvement rate. The other line is for those "die hards" who just can't believe the job was so well done, who say "well, the whole hospital contamination rate was down during this period". In the rest of the hospital control area the daily average was up and down and all over the place and had no relation, again, to the improvement shown on the top line.

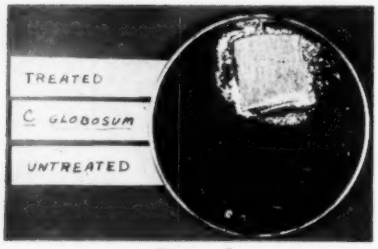


Figure 6

Figure 6 shows *C. Globosum*—a fungus causing mildew. You will notice that the treated sample is free of growth and the untreated is completely overgrown.

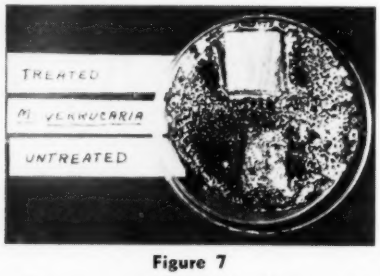


Figure 7

Figure 7 shows *M. Verrucaria,* which is also a fungus causing mildew. This fungus causes the breakdown of cellulose by utilizing the carbon of the cellulose in its process of metabolism. This causes much damage to many cellulosic materials, such as cotton, paper, wood, etc.

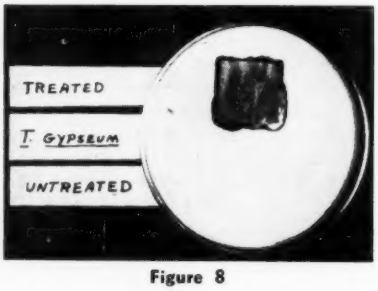


Figure 8

T. Gypseum, a fungus which causes "Athlete's Foot" and is also present in skin infection, is shown in Figure 8. This happens to be a piece of treated sock. The untreated sample at the bottom of the slide is completely overgrown as opposed to the top one, which has no growth.

Experiments were made to determine the effectiveness of the different things in the environment. Figure 9 shows the results of a three-stage experiment on hospital blankets.

During the culturing period of one hour, no activity in the room was permitted. At the midway point in time, the blanket was stripped from the bed, turned over, and tucked around the mattress with the head and foot reversed. The blankets in each experiment were taken from the hospital linen supply immediately on return from the laundry. Activity was again forbidden for the remainder of the culturing period.

When this procedure was followed in a two-bed ward room with a laundered blanket without bactericidal conditioning of the air, blanket, or room surfaces, a culture colony count of 100 was obtained. When this experiment was repeated in a room having no bactericidal treatment of either surfaces or air, with a blanket bactericidally treated, the colony count was 43. The third stage involved a bactericidally conditioned blanket and a room which had been given the same conditioning of air and surfaces as carried out in the hospital during the main experiment. The colony count then was 5.

Figure 10 illustrates how important it is to have the air carrying bacteria and other organisms come into contact with the decontaminating surfaces.

This depicts an experiment in two two-bed wards.

Before bactericidal conditioning, the air in each of these wards averaged 42 colony counts. After bactericidal conditioning, they remained near zero for three weeks.

Two patients, one with a mouth lesion and one with furunculosis of the shoulder (both of bacteriologically proved Staph. Aureus origin) were admitted to room "A". The recirculation factor was RT=10. After two days of high counts in room "A" the patients were shifted to room "B". Within six hours, room "A", despite a high degree of personnel activity, was decontaminated to zero. In two days the air colony count in room "B" rose to 80. At this point recirculation time was changed to RT=2.5. The air colony count dropped to 5 within six hours.

During the fifth week of this experiment, single bactericidal filters were substituted for double filters. The rise in air colony counts for both rooms prompted a return to use of double bactericidal air filtration. Colony counts immediately decreased again. In the middle of the sixth week, the recirculation time in room "B" was unchanged to RT=5. The count immediately rose to 28. The next day it was changed back to RT=2.5, and the count dropped to 2. Room "A" in the meantime remained at zero, except for the period when single filtration was attempted.

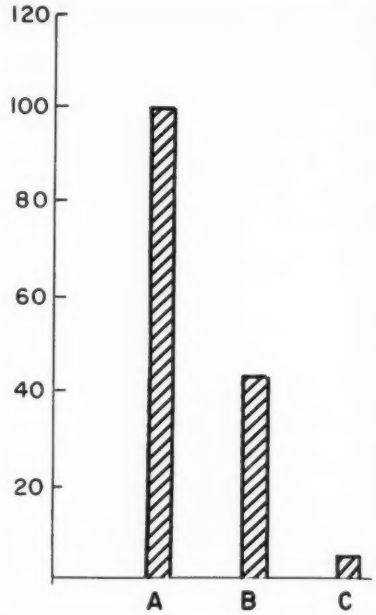


Figure 9

As you see, most of these slides were made from the hospital study; however, the bactericidal requirements for the textile industry do not differ from the requirements of a hospital. (See Table I).

We need a wide spectrum; that is, the bactericide and fungicide must kill virtually *all* bacteria and fungus.

It must be long lasting.

It must have a durable killing power. In other words, it must resist washing and it should remain effective on any surface for long periods of time.

It must be economically feasible.

It must be safe for long use and intimate contact with no ill or toxic effects.

It should be easily included within the normal processing of textiles and other materials as well as hospital routines.

It also must be acceptable to the staff in a mill in that it is easy to handle, not injurious or troublesome even though used regularly.

We think the total control of our environment is a very practical possibility. The law has already determined that a bottle of milk can only have a certain number of bacteria. The city, in almost every community, controls the number of bacteria found in the drinking water. Why can't a standard safety level of bacteria be worked out for our environment, which from the point of view from

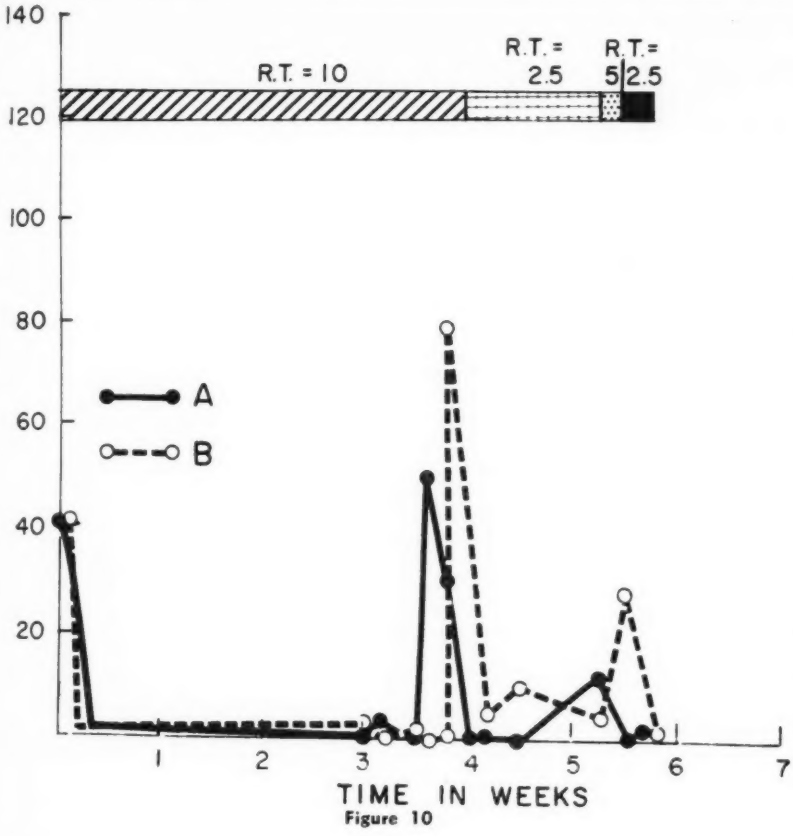


Figure 10

most of us here means a standard level of bacteria in textiles? Why can't my clothes, my furniture, my rugs and draperies be active decontaminating agents and help protect me from the germs that I picked up in the subway or on the street or at a large meeting like this. Many of us are carriers of pathogenic organisms that cause disease and, as we move around, we contaminate this environment. Don't we as producers of perhaps the largest part of man's environment have an obligation to actively join this battle against infection and disease? We can't be neutral, we must contaminate or decontaminate.

TABLE I
Bactericidal requirements
1) Widest spectrum
2) Long lasting
3) Economically feasible
4) Safe for long use
5) Easily includable within normal hospital routines
6) Acceptable to staffs in continual use

CONCLUSION

Now, in closing, let me add this. We have pioneered in this work and we will continue to pioneer, but the scope is so big and the job ahead so monumentally important to public health that we encourage anyone and everyone—be they competitor or not—to research and develop even better bactericides and fungicides—to build in even longer and longer lasting effectiveness. The textile industry must assume the responsibility and leadership if we are to achieve this goal of total environmental control.

Membership Applications

JUNE 9—JUNE 15, 1960

NEW ENGLAND REGION

Northern New England Section

Transfer to Senior

Robert J Lippe—Chemist, F A Putnam Mfg Co, Keene, NH. Sponsors: D H Thomas, R J Peirent.

Rhode Island Section

Associate

Roy W Richards—Chemist, Cranston Print Works Co, Cranston, RI.

CENTRAL ATLANTIC REGION

Delaware Valley Section

Senior

Leon F Horn—Chemist, E I duPont de Nemours & Co, Inc, Wilmington, Del. Sponsors: O C Bacon, J E Smith.

Hudson-Mohawk Section

Junior

Louis D LaTorre—Technical sales, Ritter Chemical Co, Amsterdam, NY. Sponsors: A Mafilios, W A Nelson.

SOUTHERN REGION

Southeastern Section

Senior

Harrison S Weeks—District sales mgr, Tennessee Products & Chem Corp, Nashville, Tenn. Sponsors: L R Greenwood, J E Turner.

Washington Section

Junior

Bernard G Kidda—Chemist, Harris Research Labs, Washington, DC. Sponsors: A E Davis, W C Jackson.

NON-AFFILIATED

Senior

Zuri S Guindi—Plant mgr, Cia Industrial Kindy, SA, San Bartolo Naucalpan, Mexico. Sponsors: A Saltiel, S Sampson.

Suekichi Kabuki—Planning mgr, Kyoto Bleaching & Dyeing Co Ltd, Mishikujo, Minamiku, Kyoto, Japan. Sponsors: H R Hushebeck, R C Squier.

Charles G Merrall—Dyer, Templon Spinning Mills Ltd, Drummondville, Canada. Sponsors: G A Wilkie, K A Lister.

Masaharu Tanaka—Vice president, Kyoto Bleaching & Dyeing Co Ltd, Nishikujo, Minamiku, Kyoto, Japan Sponsors: H R Hushebeck, R C Squier.

Tokuji Saimei — The president, senior managing director, The Shinto Dyeing Co, Higashiyodogawa-ku, Osaka, Japan. Sponsors: T Miya, K Matsuki.

Gaston H Vandendaele—Eng techn, Belgian & General Chemicals, Brussels, Belgium. Sponsors: L Sonneborn, J Turer.

Transfer to Senior

Thakorbhai J Patel—Technical dir, Rajratna Silk Mills, Bombay, India. Sponsors: G M Kidder, G R Thompson.

Rhode Island Section———

FACTORS CONSIDERED IN PLACEMENT OF TECHNICAL PEOPLE*

A F HARTFORD
College Relations Section
E I duPont de Nemours & Co, Inc
Wilmington 98, Del

INTRODUCTION

IT is indeed a pleasure to be with the Rhode Island Section this evening, especially in view of its being Student Night. Many of you present probably do not have the same appreciation of the word "student" as someone as myself who has been in college recruiting work during the past decade. When I was asked to assist in this meeting, I was somewhat reluctant until I realized it was a Student Night Meeting. Then my interest immediately perked up.

Prior to my assignment in college recruiting activity, I worked for the Organic Chemicals Department at the Chambers Works located in Deepwater, New Jersey. My work consisted of process development and improvement studies in the areas of fine chemicals and heavy chemicals and later related to improvement studies in the maintenance and engineering phases at this plant. With five years of this type of experience, I had gained insight into the work carried on by a variety of technical people in operating and technical assignments. This background has proven very valuable in my college recruiting work since much of my experience was in the area of work in which young men are usually employed. I mention this because it may be of interest to you to know the type of background representatives in college recruiting have in the Du Pont Company.

This evening I should like to touch upon the training and areas of employment of Du Pont engineers and scientists, review a few typical assignments with special reference to textile graduates, and discuss six of the major factors considered in the placement of technically trained personnel.

DISCUSSION

In Du Pont, we have about 7,500 engineers employed in a variety of activities. In order to give you some idea as to the field of training of these engineers, I have prepared the following statistical information: 45% of our engineers are chemical, 26% mechanical, 8% electrical, 8% civil, 6% industrial, 2% metallurgical, 1% textile, and 1% mining. The remaining 3% are in a variety of engineering fields, such as, engineering physics, engineering mechanics, nuclear engineering, ceramic engineering, etc. A further breakdown of the engineers in Du Pont shows that we have 37% of all of our engineering people in strictly technical activity, that is, doing some sort of research, development, or design work. The remaining 63% are in other activities, such as manufacturing, sales, engineering or administrative functions. Engineers in Du Pont account for 60% of the total of all technical people employed by the Company, the other 40% are trained in the sciences.

For the beginning assignments, engineers start in a variety of functions in the Company and a breakdown of this is as follows: 30% start in the development function, 23% in production, 17% in plant engineering, 12% in research, 8% in sales or sales service type of activity, 4% in methods and planning work, 4% in design, 2% in construction.

The scientifically trained individuals in the Company number about 4,500. Of this number, 80% have training in a variety of fields of chemistry. The remaining 20% have training in general science, physics, biological and agricultural sciences and with about 5% in other fields of science. Forty percent of these employees have PhD degrees, 12% have MS degrees and the remaining 48% have BS degrees. For the most part, these employees start in research or development activities. This averages nearly 90%. Only 10% of these scientifically trained employees would start in production or sales activities. There are opportunities for these employees also to advance into administrative functions, but for the most part they stay in technical activities. Currently, about 60% of the scientifically trained employees in Du Pont are in technical activities.

Since a number of the students present this evening are in the textile field, I thought you might be interested in some background on textile graduates who are presently employed by Du Pont. We have nearly 200 textile graduates with 10 different classifications of textile degrees. The majority of these people are employed in eight of our 12 industrial departments and six individuals with textile training are in four of our auxiliary departments. Another item which might be of interest is that about one third of these textile-trained people are in administrative or staff functions, and the remaining two-thirds are in production, sales, or research in several of the Company's departments. I mention these to point out to you that a textile graduate, like any other technical graduate, has an opportunity to broaden himself and yet capitalize on his training and background. For instance, those textile-trained individuals who are in administrative functions hold positions in management, such as sales director, plant manager, sales branch manager, industrial relations manager, etc.

Since the majority of the textile graduates are in our Textile Fibers Department, I believe it might be well to give you some idea of the work carried out by those starting in this organization. For example, a young college-trained man employed by our Seaford, Delaware, plant as a production trainee will work in different areas of the plant under the supervision of experienced production personnel and will attend various training courses. Then he may be placed in a production assignment where he has the responsibility for a phase of the production process and the subordinate personnel in operating jobs. If he progresses in the supervisory line of positions, he takes

*Presented at the Student Night meeting of the Rhode Island Section held April 29, 1960 at Providence, RI

on greater responsibility in the number of people under his management and in the extent of his coverage of more manufacturing steps in the total process. At some point, early in the game, he may swing over into methods and planning activity, or in other phases of the plant activity, such as project engineering. He might also go into engineering technical studies, involving process improvement and designing of more efficient equipment with the purpose of improving the chemical yields, raising the quality of our product, and other types of development.

Let's now look at a typical assignment of a man with textile or chemical training in our Organic Chemicals Department, which is very closely tied in with the textile industry from the standpoint of dyeing and finishing of textile fabrics. This Department also manufactures organic intermediates, petroleum products, and Freon chemicals. This Department places men with textile and other chemical training in its Technical Laboratory. This Laboratory is closely associated with both the manufacture and the sale of dyes and textile chemicals, exercising quality control over production, and providing information as to how these products are to be used. The members of the staff of this laboratory have had wide practical experience together with the necessary scientific training in their type of work. To assist them in their activities, the laboratory is equipped with the latest machinery and apparatus for application of dyes, dyeing assistants, finishing agents, water repellents, etc. With this equipment, it is possible to duplicate or simulate conditions existing in actual practice.

The young man going into this laboratory would have an opportunity to work in the *quality control* function for several months. This particular group is involved in the thorough and systematic testing to determine the quality, working properties, physical characteristics, and other factors of all dyes and textile chemicals manufactured on the Chambers Works, where the technical laboratory is located. This is a very important function since the laboratory is responsible for the maintenance of high-quality products that will produce consistently uniform results to insure customer satisfaction.

He may next work in the *technical service* function of the Technical Laboratory. This area of activity is concerned with adapting Du Pont's products and selection of proper products to meet specific conditions in the trade. Services included in this function are: matching shades, developing formulas for dyeing many of the new mixed-fiber fabrics composed of natural and synthetic fibers, helping customers with their processing problems, and working out application procedures particularly suited to the customer's requirements.

Another area of activity in which a young graduate may spend several months is in the development function. The dyes and chemicals developed through the Jackson Laboratory, which is the research organization for the Organic Chemicals Department, are carefully examined and tested to determine their various properties, working characteristics, and commercial possibilities. Once these tests show that the new products have a good commercial possibility, they are further evaluated through contacts with selected companies in the trade.

After a new technical employee has had about two years' experience in these various functions, he is then in a position to be considered for sales service assignments at district offices, for assignments in direct sales in the field, or advancement to a more responsible position at the Technical Laboratory.

In order for an organization to grow and prosper, new blood must be pumped into it constantly if the Company's philosophy of promotion from within is to be effective. This is done in two ways: a) college recruiting and b) selection of potentially strong individuals from the wage-roll and/or noncollege-trained personnel. Although many persons without college training have risen to positions of importance in the Company, the greatest number of our managerial personnel are college-trained. Formal college training is not an assurance of success, but experience shows that those with such training, on the average, progress further. Therefore, it is natural that we should place much emphasis on our college recruiting as a source of new blood for the organization. This is illustrated by the facts that we have had a college recruiting program for over 30 years and that this type of recruiting accounts for about 70% of college-trained people in the Company. During this current academic year, we interviewed at over 120 colleges throughout the nation for technical and nontechnical graduates at all levels of training.

Normally, in our screening of candidates for employment consideration, we are interested in two areas, that of professional competence and that of personal characteristics. Experience has proven that strength in these two areas is essential for success in industrial life. To give you some idea of the specific factors involved, I should like to comment on the charcteristics which we feel are good indicators for selection. They are:

A) *Motivation.* This quality is difficult to recognize in a short interview, but some idea of its importance may be gathered from a survey made some time ago for W S Carpenter Jr, chairman of our board, when he was preparing a commencement address for a college graduating class. Thirteen representatives of other companies and 23 general managers and directors of Du Pont were asked the following question: "*What are the most important requirements of young college graduates for success in American industry today?*" The three answers given most frequently were 1) *motivation or will to do—strong motivation to carry through;* 2) *effective intelligence—practical and* 3) *effective relationships with other people.* In attempting to detect whether a candidate is highly motivated or not, we are interested in his reaction to the interview, his manner of approach, and his alertness. To what extent does he participate in the interview? Why did he go to college? Is he persistent and would he complete an assignment once it is given?

B) *Practical Intelligence.* Here we are trying to determine how capable a candidate is in translating the theory he has learned in college to the solution of a specific problem. For example, a candidate for experimental work should recognize the importance of manipulative skill and the ability to visualize how an experiment may work. We seek men with a highly developed curiosity and an interest in new ideas, no matter how unorthodox. Also, is he capable of doing something about these new ideas or hunches?

C) *Relationships with others.* This characteristic certainly plays a large role in whatever activity an individual is assigned, since during each day contacts are made with people at all levels in an organization. Therefore, in an interview with a college student, we ask to what extent has he participated in group activities and what did he accomplish? What is his attitude toward his professors, toward other students, or toward supervisors in summer or part-time jobs? Is his reaction one of awe or contempt or of respect and friendship? How diverse are his interests? Will he work for the best interests of his group and of the company?

In addition to these factors just mentioned, there are three other characteristics which are important in the selection process. They are maturity, communications, and leadership.

D) *Maturity.* Here we are concerned with such factors as poise in manner and speech, emotional stability as indicated by the ease or tenseness of the candidate during the interview, his ability to concentrate on the subject of discussion and to participate with appropriate comments, and his concern over minor matters. One question we try to answer as we explore this area is: Does he seem capable of "separating the wheat from the chaff," or does he surround the answer to a simple question with numerous details so that the answer can hardly be understood?

E) *Communications.* Is he able to converse fluently during the interview? Does he speak directly and to the point, using good grammar? Does he answer questions concisely and yet give the whole story? This factor is one that is becoming more and more important since our industrial organizations are becoming more complex, which means more communications through reports and memoranda.

F) *Leadership.* Here we endeavor to appraise the capacity of the individual to direct, control and influence others in different lines of action; briefly, the ability to inspire others to do their best. This might be detected through extra-curricular activities, offices held in campus organizations and honors awarded for contribution to campus groups.

Naturally, a candidate may not rank tops on all these items but the points just mentioned will give you some idea of the type of information which we believe is important in arriving at an over-all appraisal of a student. You may say that we expect a great deal of him if he must be fairly good on all these scores to merit consideration. Nevertheless, we believe that if he is to bring to the job the potentiality necessary to progress up the ladder to greater and greater responsibility, these qualities must be present to a degree.

CONCLUSION

I have mentioned here things we look for in our college interviews. However, we must keep in mind that such interviews are, at best, of short duration, and are primarily a screening device. The acid test is the candidate's interviews with personnel at our plants, laboratories, and offices. Here the candidate is interviewed by several persons, each looking for specific qualities, and the candidate's final selection is based on a decision by this group of interviewers. This latter procedure may not be strictly scientific, but over the years has proven an effective instrument of selection.

AATCC Calendar

COUNCIL, COUNCIL COMMITTEES, RESEARCH COMMITTEES
Sept 8-9 (Atlanta, Ga); Sept 8—Council Committees and Research Committees; Sept 9 (AM)—ECR, TCR; Sept 9 (PM)—Council
Nov 17-18 (New York, NY); Nov 17—Council Committees and Research Committees; Nov 18 (AM)—ECR, TCR; Nov 18 (PM)—Council

NATIONAL CONVENTIONS
Oct 6-8 (Sheraton Hotel, Philadelphia, Pa); Sept 28-30, 1961 (Buffalo, NY); 1962 (Southern Region); 1963—Boston; 1964—New York; 1965—Chicago

DELAWARE VALLEY SECTION
Sept 16 (Reading, Pa); Nov 4, Dec 9 (Philadelphia, Pa)

NORTHERN NEW ENGLAND SECTION
Sept 9 (Outing—Wachusett Country Club, West Boylston, Mass); Oct 21 (Hotel 128, Dedham, Mass—"Customer Service"—Arthur Swenson, J P Stevens & Co, Inc, and P J Fynn, J C Penney Co); Dec 9 (Colonial Country Club, Lynnfield, Mass—"Present-day Economic Outlook in Textiles"—William I Kent, Kent Mfg Co); Jan 20 (Hotel 128, Dedham, Mass—Symposium on "Mechanical and Chemical Finishing of Textile Fabrics"—John J McDonald, Lowell Technological Inst, D D Gagliardi, Gagliardi Research Corp, and Werner von Bergen, J P Stevens & Co, Inc)

PACIFIC SOUTHWEST SECTION
Sept 24-26 (Outing—Apple Valley, Calif); Nov 18 (Rodger Young Auditorium, Los Angeles, Calif); Dec 10 (dance)

PIEDMONT SECTION
Sept 23-24 (Hotel Charlotte, Charlotte, NC); Jan 21 (Poinsett Hotel, Greenville, SC); April 2 (Washington Duke Hotel, Durham, NC); June 9-10, 1961 (Outing—Grove Park Inn, Asheville, NC); Sept 23, 1961 (Hotel Charlotte, Charlotte, NC)

RHODE ISLAND SECTION
Sept 23 (Management Night); Oct 28 (Providence Engineering Society); Dec 2 (Annual Meeting—Johnson's Hummocks)

SOUTH CENTRAL SECTION
Sept 17 (Andrew Jackson Hotel, Knoxville, Tenn); Dec 9 (Hotel Patten, Chattanooga, Tenn)

SOUTHEASTERN SECTION
Sept 10, Dec 3 (Atlanta Athletic Club, Atlanta, Ga)

WESTERN NEW ENGLAND SECTION
Sept 23 (Blake's Restaurant, Springfield, Mass); Oct 21 (Annual Meeting, Rapp's Restaurant, Shelton, Conn); Dec 2 (Rapp's Restaurant, Shelton, Conn)

Membership Applications

JUNE 16-22, 1960

NEW ENGLAND REGION

Rhode Island Section

Senior

John G Erhardt Jr — Research chemist, Eltex Research Corp, Providence, RI. Sponsors: W J Cooney, C S Tanner.

Western New England Section

Senior

Floyd E Colvin—Lab mgr, Res & Dev Dept, Cuno Engineering Corp, Meriden, Conn. Sponsors: G M Kidder, G R Thompson.

CENTRAL ATLANTIC REGION

Delaware Valley Section

Junior

Andrew J Pintozzi—Laboratory technician, Peerless Dyeing Co, Philadelphia, Pa. Sponsors: L R Croce, J Farquhar.

Hudson-Mohawk Section

Senior

Frederic L Aibel—Dyer, Ideal Mills Inc, Poughkeepsie, NY. Sponsors: H Gendreau, C M Mueller.

SOUTHERN REGION

Piedmont Section

Senior

John G Schoepf—Latex sales mgr, Para-Chem Southern Inc, Greenville, SC. Sponsors: J E Kerr, J J West.

Transfer to Junior

Kenneth L Brewton Jr—Chemist, Abbeville Mills Corp, Abbeville, SC. Sponsors: H R Walker Jr, C J Campbell.

WESTERN REGION

Mid-West Section

Associate

Joseph H DiLorenzo—Sales rep, Koppers Co Inc, Chem & Dyestuff Div, Chicago, Ill.

Elected to Membership

No designation after name indicates Senior
(A) indicates Associate
(J) indicates Junior
(S) indicates Student
* indicates transfer from another class of membership

June 16, 1960

NEW ENGLAND REGION

Western New England Section

Richardson A Dubreuil

CENTRAL ATLANTIC REGION

Delaware Valley Section

Thomas Bell
Morton Zive
Daryl Ann Hansen (S)

Hudson-Mohawk Section

Millard C Calhoun
Jack Okrepkie

Metropolitan Section

John E DeGraff
John Hoffman
Eli Levine
Gordon K Carlson (J)
Raymond H White (A)

Niagara Frontier Section

John Brandwood

SOUTHERN REGION

Piedmont Section

Clifton W Bradsher
Joseph F Carter
Martin Chanin
Robert G Currier
William L Foster
Grady C Griffin
John R Montgomery
Ned C Sprinkle
F Russell Trimber

Southeastern Section

Robert M Barr
Donald H Early
Aldo Parian
Louis R Avant (A)

WESTERN REGION

Mid-West Section

Robert F Coles
Richard J Hauser

Pacific Southwest Section

Nels R Hansen (A)

STUDENT CHAPTER

Georgia Institute of Technolcgy

William W Bailey (S)

NON-AFFILIATED

Alonso S Dela Concha
Kurt A Schoenberg
E Shimizu

June 30, 1960

NEW ENGLAND REGION

Northern New England Section

Francisco M DeAndrade
*Wallace A Baker**
*Alfred A Hinckley**
*Alphonse R Presto**
*Robert H Waldinger**
*Earl R Wilbur**

Rhode Island Section

Stein Y Holst
*Stanley J Sieczkowski**

Western New England Section

*William F Flaherty**
*James H Hunter**

CENTRAL ATLANTIC REGION

Delaware Valley Section

William A Drummond
William Kamarek
Albert J Grunfeld (J)

Hudson-Mohawk Section

Charles L Hazleton
Robert M Kemp
Miecsyslaw Kiersznowski

Metropolitan Section

Bernard J Becker
Christian W Schouten
Robert A Thomases (J)

SOUTHERN REGION

Piedmont Section

Herbert R Davis
Alton M Faires
Eugene S Norris
Carl W Wilson Jr
Robert R Jeter (A)
*Wesley K Fooshe Jr**
*John E Ward**

Southeastern Section

James D Sisk

WESTERN REGION

Mid-West Section

Walter L Shaw

NON-AFFILIATED

Werner Kunz
Victor S Monteagudo

ACTIVITIES OF THE LOCAL SECTIONS

Hudson-Mohawk

HUDSON-MOHAWK SECTION held its seventh annual Ladies Night affair on May 21 at the Chelsea House, Tribes Hill, NY.

The Dr Jack Epelberg Memorial Award was presented to Achilles Mafilios, Ritter Chemical Corp, Inc.

Movies of the 1959 outing were shown by Harold Simon, General Aniline & Film Corp.

A social hour of dancing followed.

Jack Epelberg Award winner for 1960, Achilles Mafilios, Ritter Chem Co, Inc (second from right) poses with previous Award winners and H-M chairman. L to r: Edward A Chevrette, Apex Chem Co; Floyd J Szurek, Mohasco Industries, Inc, Hudson-Mohawk Section chairman; Irwin J Smith, Surpass Chem Co; William A Nelson, Ritter Chem Co, Inc; John Merrill, Cluett-Peabody, Inc; Mr Mafilios; and Walter Drautz, General Aniline Works. Albert E Herrmann Jr, General Aniline Works, another previous winner of the Award, was not present for photo.

Delaware Valley

DELAWARE VALLEY SECTION held its 1960 Outing at North Hills Country Club with 357 members and guests attending, 159 of which were golfers.

Ed Smith, Nyanza Color & Chemical Co, retired the Section's golf trophy by recording his third low gross over a period of 12 years. Art Godley turned in second low gross; Fred Rosenberger, National Mills, was third; and Carter Fergusson, A C Fergusson Co, was fourth.

Delaware Valley Section Chairman Clarence Seibert, Scholler Bros, was awarded the Fancourt Memorial Cup for low net. He was followed by R Kroener, second, and R Daley, Chemical Div, Goodyear Tire and Rubber Co, third.

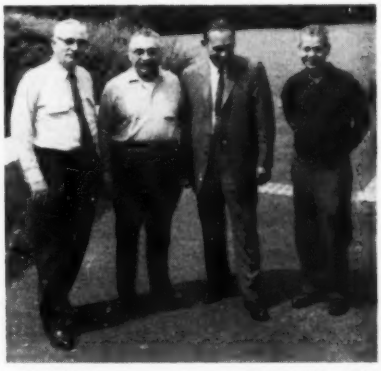
Lewis R Croce, National Dyeing Co, and Herbert R Brewster, John Zimmermann & Sons, tied for first place in the quoit-pitching contest. Bob Reiner and Brad Jennings tied for the third spot.

In the dart-throwing competition, it was Bob Reiner, first, Bob Cooney, second, and Jim Lord, third.

112 companies donated to the prize list.

D W Robinson, Para-Chem, Inc, National Councilor; Geo O Linberg, Melrose Chemical, past president, AATCC; C A Seibert, Scholler Bros, DV Section chairman; H Kerr, C H Masland Rug Co

K E Hankins, C H Masland Rug Co; R F Crawford, Para-Chem, Inc; P H Orser, Frankford Woolen Mills



E W Empting, Verona Dyestuffs, DV Section secretary; A E Raimo, John Campbell & Co, outing chairman; J A Adams, Calgon Inc; W A Fye, Anchor Dyeing & Finishing Co

E W Empting, Verona Dyestuffs, DV Section secretary; W H Bertolet III, Laurel Soap Mfg Co, 1960 National Convention co-chairman; Charles Miller, Artloom Carpet Co; R L Jones, Royce Chemical Co

F E Nevins, Ciba Co, Inc; W S Sollenberger, American Viscose Corp, AATCC vice president, Central Atlantic Region; J A Adams, Calgon Inc; T F Flynn, Calgon Inc

F Rosenstein, Synthetic Finishing Corp; S Woll, F P Woll Co; R Davis, Alco Oil & Chemical Co; J B Winkler, Enjay Chemical Co

J J Murphy and W H Bertolet Jr, Laurel Soap Mfg Co; R Caffee, Puritan Knitting Mills; T F Flynn, Calgon Inc

South Central

SOUTH CENTRAL SECTION held its annual summer outing May 13-14 at the Riverside Hotel, Gatlinburg, Tenn, with approximately 170 attending. General chairman Frank W Smith, Ciba Co, Inc, was assisted by the following committees: *dining*—Lowell Shive, Arnold, Hoffman & Co, Inc; *horseshoe pitching*—Robert N Ingram, Lebanon Woolen Mills; *finance*—W Jack Welborn, Riegel Textile Corp; *ladies activities*—Mrs F W Smith, chairman, Mrs J E Turner, Mrs Lowell Shive, Mrs Bill Bass; *refreshments* — L R Greenwood, Southern Dyestuff Co; *golf*—Ronnie J Fryer, Sandoz, Inc; *registrations*—James E Turner, Dixie Mercerizing Co; *fly casting*—Philip Stephenson, Belcraft Chenilles.

The golf tournament, held at the Gatlinburg Country Club, produced the following winners:

Low gross (millmen)—E Lacey, Russel Lacey Mfg Co, 85; J Mosley, Georgia Rug Mill, 88.

Low gross (suppliers)—F Kibler, Morningside Chemical Co, 85; J Fancourt, W F Fancourt Co, 86.

South Central Section officers, l to r: W J Welborn, Riegel Textile Corp, treasurer; Robert N Ingram, Lebanon Woolen Mills, national councilor; Jack McNab, Mac Chem Co, sectional committeeman; J D Mosheim, Crystal Springs Bleachery, national councilor; Edwin F Jurczak, Burkart-Schier Chem Co, chairman; Charles Braswell, Seydel-Woolley & Co, sectional committeman; L R Greenwood, Southern Dyestuff Corp, sectional committeeman; and Lowell Shive, Arnold, Hoffman & Co, Inc, secretary

Winners of the various golf categories are shown, l to r: Ralph Taylor, Wica Chemicals, Inc, "high gross"; Bill Elmer, Shell Chem Co, low net, suppliers; Tom Ratajczak, Berkshire Color & Chem Co, "hole in one"; Jack Fancourt, W F Fancourt Co, second low gross, suppliers; E V Helms, Geigy Dyestuffs, "fewest putts"; W M Fayssoux, Royce Chem Co, second low net, suppliers; Arthur Williams, DuPont Co, "blind bogey"; and Fletcher Kibler, Morningside Chem Co, low gross, suppliers. Not shown in photo are Ed Lacey, Russel Lacey Mfg Co, and Jim Mosley, Georgia Rug Mill, first and second low gross, millmen.

Seated at head table during Saturday evening banquet, l to r: Mr & Mrs Lowell Shive, secretary; Mr & Mrs Robert Ingram, national councilor; Mr & Mrs Frank W Smith, outing chairman and master of ceremonies at the banquet; Mr & Mrs Edwin Jurczak, chairman; Mr & Mrs Joe D Mosheim, national councilor.

Winners at horseshoe pitching, l to r: Fred Broadhurst, W F Fancourt Co, singles runnerup; Don Robertson, Scholler Bros, singles winner; W M Fayssoux, Royce Chem Co, and Harvey DeLay, Standard-Coosa-Thatcher Co, doubles winners; Charles Braswell, Seydel-Woolley & Co, and J T Manning, Standard Knitting Mills, doubles runners-up.

Giving serious thought to their putting are, l to r: Ralph Taylor, Wica Chemicals, Inc; LeBron Madaris, Crystal Springs Bleachery; Bill Pearson, Hilton-Davis Chem Co; and Gene Cote, Interchemical Corp.

Winners at flycasting, l to r: Howard Cardwell, Cherokee Textiles, 4th; William Fayssoux, Royce Chem Co, 2nd; Fowler Jackson, Laurel Soap Mfg Co, 1st; and Frank Cater, Ray-Ser Dyeing Co, 3rd.

L to r: Mr & Mrs J D Mosheim, Crystal Springs Bleachery, national councilor; Mr & Mrs George Dozier, Southern Dyestuff Co; Mr & Mrs Fletcher Kibler, Morningside Chem Co; Mrs Frank W Smith, mistress of ceremonies at the ladies luncheon.

Winners in men's bridge, l to r: Francis Minich, Metro-Atlantic, Inc, 3rd; Ed Brophy, Mohasco Industries, 1st; and Steve Driggers, Farm & Industrial Chem Co, 2nd.

Enjoying one of the ladies activities are, l to r: Mrs W S Quigg (R J Quigg Chem Co), Mrs Charles L Ogletree (Crystal Springs Bleachery); Mrs Fletcher L Kibler (Morningside Chem Co); Mrs J Moore Patton (Morningside Chem Co); and Mrs Frank Harris Jr (Burkart-Schier Chem Co)

Low net (millmen)—W Hurley, Kingsboro Silk Mills, 75; P Smith, Cartersville Dyeing and Finishing Inc, 76; L Madaris, Crystal Springs Bleachery, 76.

Low net (suppliers)—W Elmer, Shell Chemical Co, 70; W Fayssoux, Royce Chemical Co, 71.

Other winners in the golf competition were A Williams, DuPont Co, "blind bogey"; T Ratajczak, Berkshire Color & Chemical Co, "hole in one"; E V Helms, Geigy Dyestuffs, "fewest putts"; and R Taylor, Wica Chemicals, Inc, "high gross".

D Robertson, Scholler Bros, was the winner of the horseshoe pitching singles event, with T F Broadhurst, W F Fancourt Co, runner-up. Winners of the doubles event were H DeLay, Standard-Coosa-Thatcher Co, and W M Fayssoux, Royce Chemical Co. C Braswell, Seydel-Woolley & Co, and J T Manning, Standard Knitting Mills, were runners up in the doubles.

Low net score in golf among millmen was turned in by Bill Hurley, Kingsboro Silk Mills (center). Tied for second were LeBron Madaris, Crystal Springs Bleachery (left) and Paul Smith, Cartersville Dyeing & Finishing Inc (right).

Winner of the fly-casting contest was F Jackson, Laurel Soap Mfg Co. Following in order were W Fayssoux; F Cater, Ray-Ser Dyeing Co; and H Cardwell, Cherokee Textile Mills.

In men's bridge, E Brophy, Mohasco Industries, took first-place honors, followed by S Driggers, Farm and Industrial Chemical Co, and F Minich, Metro-Atlantic, Inc.

Mrs Minich took top honors in ladies bridge. Second palce went to Mrs G L Dozier, whose husband is with Southern Dyestuff Corp. Mrs J D Mosheim, whose husband is with Crystal Springs Bleachery, was third.

Canasta honors went to Mrs S T Holland Jr whose husband is with American Cyanamid Co. Millie Quigg, whose husband is with R J Quigg Chemical Co. was second.

Mrs L Madaris won the ladies bingo prize.

The South Central Section will hold its next meeting at the Andrew Jackson Hotel, Knoxville, Tenn, on Sept 17.

Employment Register

This column is open for two insertions per year, per member, without charge. Blanks may be obtained from, and filed with, the secretary of the Association, Post Office Box 28, Lowell, Mass. It is understood that these will be open to inspection by prospective employers who can obtain further information from the secretary.

60-9

Education: Drexel Inst of Technology, diploma in scientific structural engineering; Pennsylvania State Univ extension course, two semesters (150 class hours), certificate in textile chemistry—testing and inspection.

Experience: Supt skein dyeing, dyer foreman (piece dyeing).

Position desired: Supt of dyeing, skein or piece.

Location: Eastern U S preferred; other domestic or foreign acceptable.

Age: 53; married; two dependents; references.

7-11, 7-25

60-10

Education: B S and M S (chemist).

Experience: Research chemist.

Position desired: Research & development.

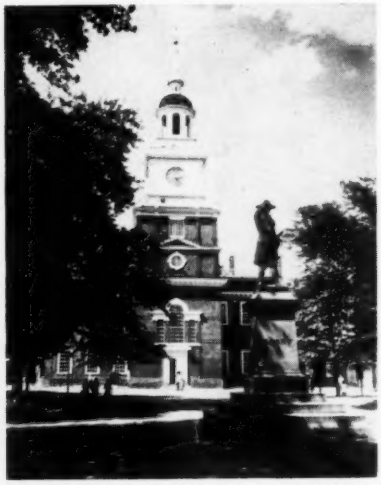
Location: New England or California preferred; North, Northeast or Southwest acceptable.

Age: 45; married; three dependents; references; complete resume on request.

7-11, 7-25

PHILADELPHIA — THE 1960 CONVENTION CITY

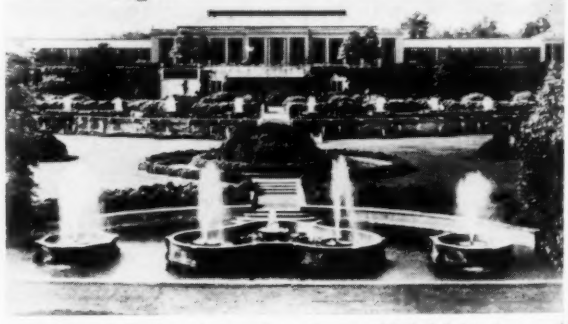
The famous old Liberty Bell is on permanent exhibition in Independence Hall. Visitors hear the Story of the Bell through a tape recording by Edward R Murrow.



Independence Hall, the most historic place in the Nation. Here the Declaration of Independence was signed and first proclaimed and here the Constitution of the United States was debated and adopted.

The Betsy Ross House is the "Birthplace of Old Glory". Here the little Colonial seamstress made the first American flag.

The Philadelphia Museum of Art. This magnificent building stands at the head of the Benjamin Franklin Parkway. An architectural masterpiece, it contains one of the world's great collections of art.



Longwood Gardens in nearby suburban Philadelphia is one of the showplaces of the East Coast. It was formerly the estate of Pierre S du Pont.

United States Mint, the nation's first, is one of the two now making our country's coinage. Many foreign coins are also minted here. Conducted tours of the Mint are scheduled at 10 am and 2 pm Monday through Friday.

The encampment at Valley Forge State Park in nearby suburban Philadelphia. Here George Washington and his Continental Army spent the bitter winter of 1777-78. Today the beautiful park of more than 2,000 acres is one of the nation's most sacred shrines.

News of the Trade

AATT Appoints Technical Council

At its June meeting, the board of governors of the American Association for Textile Technology appointed its first technical council in accordance with its new constitution, which was approved in the spring.

The Council includes Kurt J Winter, chairman, and Giles E Hopkins, alternate chairman (both ex-officio); Stanley Backer, Massachusetts Inst of Technology; Erb N Ditton, consultant; Ephraim Freedman, Macy's Bureau of Standards; Walter J Hamburger, Fabric Research Laboratories, Inc; Stephen J Kennedy, U S Army QM Corps; Richard T Kropf, Belding Heminway Co, Inc; Gerard K Lake, Burlington Industrial Fabrics Co; William A Newell, Textile Research Ctr, N C State College; Edgar L Schlesinger, United International Corp; Arthur M Spiro, Waumbec Mills, Inc; Paul B Stam, J P Stevens & Co, Inc; Michael H Strub Jr, The Duplan Corp; and Philip Wick, Philip Wick Co, Inc.

The duties of the Council will include the investigation of proposals for technical activities in AATT, recommendations to the board for suitable action on such proposals, the interpretation for the membership of technical developments of national importance, and such other technical activities as may be within the interests of the Association.

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Intercontinental Subsidiaries Move to NJ

Three Intercontinental Chemical Corp subsidiaries, namely Carbic-Hoechst Corp, Hostachem Corp, and Hostawax Co, and the accounting department of Intercontinental have moved to new headquarters in Mountainside, NJ, at 270 Sheffield St, off Route 22. These firms are technical representatives and distributors for the products of Farbwerke Hoechst AG, and its subsidiaries, in West Germany, as well as for Hoechst Chemical Corp, West Warwick, RI, and others. The newly completed building covers an area of over 40,000 square feet.

Carbic-Hoechst Corp, formerly located at 451 Washington Street, New York, sells dyestuffs, pigments and textile chemicals. It will have a modern laboratory for customers' service and application research, and a complete warehouse, including refrigerated storage for fast color salts.

Hostachem Corp and Hostawax Co, whose special products include industrial and pharmaceutical chemicals, plastic films, synthetic fibers and waxes, will also have their sales offices and warehouse at the new location, and Hostawax Co will have its own modern laboratory. They were formerly located in the Empire State Building.

Executive offices of Intercontinental Chemical Corp and Hoechst Pharmaceuticals, Inc remain at the present location, 350 Fifth Avenue, New York.

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Hunzinger

Murray

Capuano

Crown Chemical Acquires Cravenette

Crown Chemical Corp, Providence, RI, has acquired Cravenette Co, USA as a wholly owned subsidiary.

Robert C Hunzinger will continue as president of the Cravenette division with Walter E Murray, president of Crown Chemical, as chairman of the board and Daniel V Capuano as treasurer. The plant, laboratories and offices of Cravenette, located in South Hackensack, NJ, reportedly will be expanded and augmented by the research laboratories and manufacturing facilities of Crown Chemical in Providence. The entire Crown sales-service organization will work with the Cravenette staff.

Valchem Expansion

Valchem, a unit of United Merchants and Manufacturers, Inc, located in Langley, SC, has broken ground for a quarter of a million dollar expansion of its chemical plant, research and development laboratories, warehousing facilities and office space.

From a four-man operation three years ago, Valchem has developed into a modern chemical plant, currently employing more than thirty trained technicians.

The expansion includes the installation of two new stainless-steel reactors in which Valchem will make a series of specialty resins and industrial intermediates not previously marketed by the Company.

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Cyanamid Opens West Coast Office for Creslan

The Fibers Division of American Cyanamid Company last month opened a West Coast sales and merchandising office for the firm's new Creslan acrylic fiber.

The new operation, located in Cyanamid's general Los Angeles sales offices at 2300 South Eastern Ave, is headed by Ben W Wiesen, recently named manager of West Coast sales and merchandising for the division.

Cyanamid's Creslan acrylic fiber will play a growing role on the West Coast fashion scene, the company predicted. The superior dyeability and dye versatility of Creslan enable it to bring out the richness of California fashion colors, and to provide these colors with greater fastness and lasting depth, it is claimed. In addition to its dyeing advantages, Creslan reportedly possesses a unique balance of important fiber properties which makes it outstanding in versatility for both apparel and home furnishings applications.

The fiber is marketed under a quailty control program which restricts use of the Creslan trademark to finished fabrics and knit fashions which meet quality and performance standards established by Cyanamid in cooperation with manufacturers.

Wes Coast cutters who currently have scheduled programs with Creslan for coming seasons are Catalina, Miss Pat, Phil Altbaum, Trude of California, Mister Sportswear and Oscar Strauss, Cyanamid reported.

Stepped-Up Lanolized Promotional Program to be Launched in September

An extensive consumer advertising program will be launched this Fall to widen the scope of interest in Lanolized-finished fabrics.

The fabric finish for which added comfort is claimed when worn adjacent to the skin, has been widely promoted for the past three years on trade levels only to first acquaint manufacturers and store buyers with the unique advantages of the product. The finish is manufactured by Scholler Brothers, Inc, Philadelphia, Pa.

September will mark the opening of the promotion with an imposing list of national media schedule to carry the messages. Copy will vary from pages in color to high-frequency repetition of fractional pages emphasizing hang-tag recognition. Trade level promotional efforts will be continued at a stepped-up pace in conjunction with the consumer campaign, it was stated.

Multi-millions of hang-tags will be featured through licensee manufacturers in fields already approved for use of the Lanolized finish which includes garment fields ranging from girdles, corsets, hosiery and sleepwear through gloves diapers, bathing suits and blankets.

The promotional program is being handled through Abner J Gelula & Associates of N J Inc, Atlantic City, NJ.

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New Company to Service Bancroft Licensing Program

The formation of a company to service the various licensing programs of Joseph Bancroft & Sons Co, Wilmington, Delaware, was announced May 18.

The new organization, incorporated under the name Joseph Bancroft & Sons of New York, Inc, will be located at 1430 Broadway. It will be concerned with service work for Bancroft's Everglaze and Ban-Lon trademark and licensing activities.

At a recent meeting of stockholders, a board of directors was named which includes W Ralph MacIntyre, president of Joseph Bancroft & Sons Co, Arnold L Lippert, William R MacIntyre Jr, Alfred R Valentine, and J Gorman Walsh.

Officers elected by the board for terms of one year each, are W Ralph MacIntyre, chairman of the board; Arnold L Lippert, president; Lee W Rainard, vice president; Lola Costigan, vice president; and Alfred R Valentine, secretary and treasurer.

Demonstrating the research accomplishment for which they received the U S Department of Agriculture Superior Service Award, three scientists of the Southern Utilization Research and Development Division apply a lighted match to a piece of cotton fabric treated with APO-THPC to prove it doesn't burn. They are, from the left, Leon H Chance, Wilson A Reeves, and George L Drake Jr. The award was conferred on them for research leading to the discovery of a new class of phosphorus-containing compounds and their use to impart durable flame resistance to cotton fabrics for civilian, industrial, and military use. The most successful of these is considered to be the combination of tris (1-aziridinyl) phosphonium oxide (APO) with tetrakis (hydroxymethyl) phosphonium chloride (THPC).

7th Canadian Textile Seminar

The Seventh Canadian Textile Seminar, to be held at Queen's University, Kingston, Ontario, Sept 7-8, under the sponsorship of the Textile Technical Federation of Canada, has set a target of 500 registrants. F J Knight, Hubbard Felt Co Ltd, is serving as chairman of the biennial event.

Papers will be grouped into five sections: Conversion of Fibers into Yarn, Conversion of Fibers and Yarn into Fabrics, Dyeing and Finishing, Mill Supervision, and Knitted Fabrics.

N J Mohoruk, The Hamilton Cotton Co Ltd, Hamilton, Ont, is chairman of the Dyeing and Finishing Section, which will offer six papers:

"Reactive Dyes" by T Vickerstaff, Imperial Chemical Industries Ltd

"New Horizons for Pigment Printing" by Norman S Cassell, Interchemical Corp

"The Complete Stabilization of Wool Fabrics" by Malcolm J Reider, M J Reider Associates

"Cotton Bleaching, Dyeing and Finishing" by Ernest Sewell, The Wabasso Cotton Co Ltd

"Out of Waste . . . Comes Profit" by Lee Kemberlin, Ludell Mfg (Canada) Ltd

"Dye Formula Calculation Method for Varying Liquor Ratios" by W Raymond Simpson, Lockwood Greene Engineers, Inc.

Registration fee for the Seminar is $25.00.

Full information and prospectus may be obtained by writing to the Seminar Secretary, Textile Technical Federation of Canada, 223 Victoria Ave, Westmount, Montreal 6, Quebec, Canada.

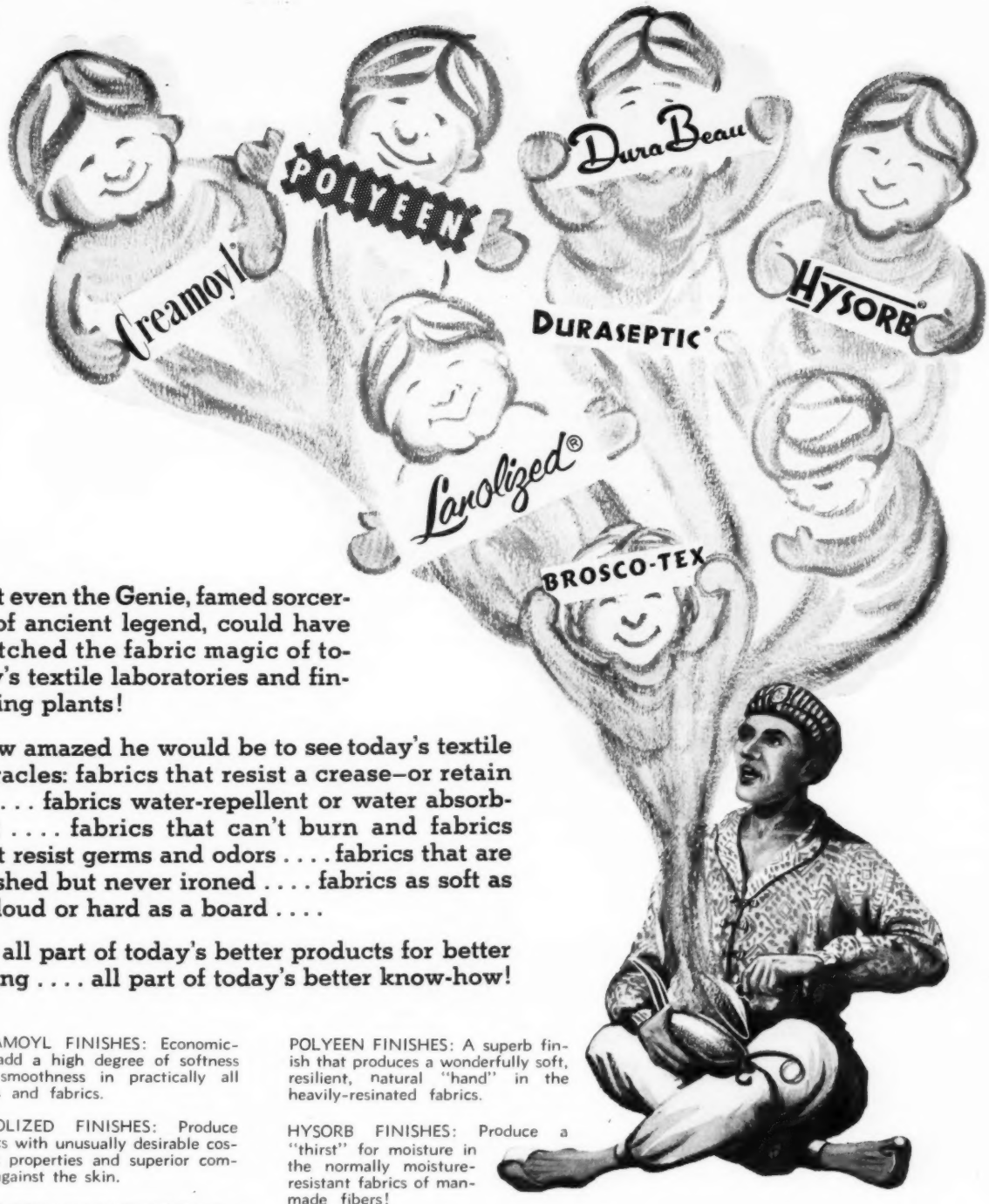
New Machines, Products, Information, Reported by USDA Cotton Researchers at Conference with Advisers

A year of research progress in cotton processing from the bale to finished fabric was reported by research workers of the U S Department of Agriculture's Southern Utilization Research and Development Division in a conference with industry advisers held recently in New Orleans, La.

Reporting were key staff members of the Southern Division's Cotton Mechanical and Engineering and Development Laboratories.

Members of the Physical Properties Investigations reported recent findings in the relationship of fiber properties to processing efficiency and product quality. It was pointed out, for example, that commercial acceptability evaluations have shown that, in general, marketable bleached materials can be manufactured from a blend of extremely coarse and fine fibers, although when dyed the fabrics showed an excessive number of neps, a defect which mars the appearance of the fabric. Effects of fiber fineness on fabric structure, an accelerated end breakage test, and the effect of short fibers on processing efficiency and product quality were also discussed.

The status of investigations aimed at producing cotton yarns and fabrics with added fullness and resiliency was reported by workers from Product Development Investigations. Special methods of producing the yarn are being used for this purpose, while chemical treatment is em-



Not even the Genie, famed sorcerer of ancient legend, could have matched the fabric magic of today's textile laboratories and finishing plants!

How amazed he would be to see today's textile miracles: fabrics that resist a crease—or retain it . . . . fabrics water-repellent or water absorbent . . . . fabrics that can't burn and fabrics that resist germs and odors . . . . fabrics that are washed but never ironed . . . . fabrics as soft as a cloud or hard as a board . . . .

It's all part of today's better products for better living . . . . all part of today's better know-how!

CREAMOYL FINISHES: Economically add a high degree of softness and smoothness in practically all fibers and fabrics.

LANOLIZED FINISHES: Produce fabrics with unusually desirable cosmetic properties and superior comfort against the skin.

DURA BEAU RESIN FINISHES: For hosiery and other fine fabrics that require superior qualities of "hand" plus added properties of fabric strength, stability and surface smoothness.

POLYEEN FINISHES: A superb finish that produces a wonderfully soft, resilient, natural "hand" in the heavily-resinated fabrics.

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BROSCO-TEX: A new finish designed to enhance tufted fabrics of all kinds . . . assures better maintenance of pile, superior resiliency and more desirable hand.

DURASEPTIC: A finish additive that inhibits growth of bacteria on fabrics . . . minimizes perspiration odors, retards mildew!

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Gathered for a group discussion during a recent conference on the mechanical processing of cotton held at the U S Department of Agriculture's Southern Utilization Research and Development Division in New Orleans, La, are, from the left, seated: C L Hoffpauir, assistant director of the Division; Joseph J Lyons, president, Central Manufacturing Division, M Lowenstein & Sons, Inc; Leonard Smith, director of utilization research, National Cotton Council of America; Clarence N Cone, vice president, Cone Mills; R J Cheatham, chief of the Cotton Mechanical Laboratory, SU; and C H Fisher, director of SU. Standing are Lawrence L Heffner, cotton utilization specialist, North Carolina State College; Nelson F Getchell, head of the Technical Section, Utilization Research Division of the National Cotton Council; William J Martin, cotton utilization specialist, Federal Extension Service; G E Goheen, assistant director of the Southern Division; and A Mason DuPre' Jr, assistant to the administrator of the Agricultural Research Service, USDA. The occasion was a conference of the industry advisers, Messrs Cone and Lyons, with the Cotton Mechanical and Engineering and Development Laboratories of the Southern Division.

ployed to enhance the desired properties and to make them permanent. A related development, a stretch-type yarn for rugs, has shown some promising experimental results. The product development workers also reported on a project to develop cotton fabrics having improved water and wind resistance for protective clothing, tentage, tarpaulins, and other military and civilian uses.

Reports were made on two projects of Microscopy Investigations. One, recently initiated, is the sudy of the mechanism of abrasion at the fiber or subfiber level. Work so far has been devoted primarily to the development of techniques. It is planned to investigate differences between dry and wet abrasion, and characteristic abrasion patterns. The other comprised a study of cotton fiber structure in comparison with some other natural fibers and selected fibers from regenerated cellulose for the purpose of correlating the microstructure of cellulosic fibers, such as cotton, with physical properties pertinent to end-use behavior.

•

Progress in Wool Utilization Research Reported by USDA at Wool Research Conference

Progress of the U S Department of Agriculture's recently enlarged Wool and Mohair Laboratory in Albany, Calif, was described by Harold P Lundgren at the International Wool Textile Research Conference at Harrogate, England, May 18 to 27.

Dr Lundgren, chief of the Laboratory, reported recent chemical investigations, particularly on resin finishes to impart shrinkage resistance to machine-washed fabrics. Extensive work with combinations of epoxy and aminopolyamide resins offers promise of success, he said. Chemical researches include work on resins and their application, on ethanolamine and other treatments for crease retention, and on oxidative degradation of proteins in wool. The investigations of fiber chemistry, he said, are supervised by William L Wasley. The Proceedings of the conference, to be published in *Journal of the Textile Institute* will include a report on resin treatments by C E Pardo and one on oxidation of proteins by Dr Lundgren.

Research on fiber physics in the Wool and Mohair Laboratory is supervised by Kenneth J Palmer, also a conference speaker. In the physical studies, Dr Palmer said, the major component of wool, which is protein, has been made soluble in water by treatment with acrylonitrile. This has enabled amino-acid analyses and use of light-scattering and sedimentation techniques in studies of molecular structure. Such studies apply guidance for research on improvements.

Application of the nuclear magnetic resonance technique, Dr Palmer said, has revealed knowledge of the sorption of water by wool. As little as one percent of water in wool is detectable by this method. Results indicate that water molecules are attached to wool protein at certain sites as "clusters" rather than in a thin layer. *Journal of the Textile Institute* will publish a report on acrylonitrile-treated protein by J J Bartulovich, Y Tomimatsu, and W H Ward, and on the work on water sorption by T M Shaw, R H Elsken, and R E Lundin.

Dr Lundgren said a third group, supervised by A H Brown, conducts product-development investigations, chiefly in a new processing laboratory completed and dedicated in November 1959. The large facility is equipped for processing wool from raw fleece to finished worsted. This wide range of operation, he said, permits research on a variety of problems, all important to growers and processors of wool and mohair.

The Wool and Mohair Laboratory is part of the Western Utilization Research and Development Division of the U S Department of Agriculture's Agricultural Research Service. Director of this regional division, one of four in the United States, is M J Copley. The four regional divisions conduct a broad program of research on utilization of crops.

•

CMRA Favors Tariff Commission as SOC Data Collection Agency

The Board of Directors of the Chemical Market Research Association voted unanimously last month in favor of having the US Tariff Commission continue to retain authority to compile and publish data on synthetic organic chemicals.

The Association, with some 650 members representing over 200 companies in chemical and allied industries, is strongly opposed to recent government proposals to transfer the Tariff Commission's data gathering and publishing of organic chemical statistics functions to another agency.

James E Sayre, President of CMRA, cited the following major reasons for his Association's stand:

"The Tariff Commission has had many decades of experience in the handling of statistics relating to synthetic organic chemicals. This backlog of experience is of extreme value to the industry.

"The Tariff Commission has on its staff a group of commodity experts whose knowledge is of great help in handling and interpreting difficult data.

"The Tariff Commission is now reporting on a wide variety of synthetic organics. The government proposes to transfer this function to another agency which is required by directive to drastically curtail the volume of listings. This limitation would be of great disservice to the chemical industry."

With the newly integrated textile application research group at our Princeton Research & Development Center . . . experienced chemists and engineers at district office, laboratory and plant locations . . . and traveling textile specialists ready to work with you in the mill . . . FMC is set to give you valuable help with a variety of processing and other textile mill problems.

Usually this technical service deals with ways to save time and money in the handling, storage and use of alkalis . . . or how to get better results in processes using products we supply to the textile industry. Frequently, however, by contributing a new perspective, we can be equally helpful in areas not directly related to our regular interests.

If we can assist you in any way, we'll be glad to do so without obligation. A call to our nearest district office is all that is required.

CAUSTIC SODA Liquid 73%, Liquid 50%, Regular and Low-Chloride Grades: Flake, Solid and Ground

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Missbach Co to Represent IDL in South

George E Missbach & Co, Atlanta, Ga, has been appointed Southeastern sales representative for Instrument Development Laboratories, Attleboro, Mass, a subsdiary of Royal McBee Corp.

Missbach & Company has had 15 years experience in handling production equipment for the textile and other industries. The company will represent IDL in sales of Color-Eye, a dual-purpose colorimeter and abridged spectrophotometer and the Delta E Color Tolerance Computer. George E Missbach, H S McCullough and their staff will service the ten Southeastern states from their main office in the Henry Grady Building in Atlanta.

•

Georgia Tech to Offer BS in Textile Chemistry

Beginning in the fall quarter 1960, the A French Textile School of the Georgia Institute of Technology will offer a new degree, Bachelor of Science in Textile Chemistry.

Up until this time, students majoring in manufacturing or management and those majoring in textile chemistry and dyeing both received a Bachelor of Science in Textiles degree. Now, these two options in the BS degree program have been separated, and two different degrees, one in textiles for those taking management, and one in textile chemistry, are to be offered. The Bachelor of Textile Engineering degree program is not affected by this change.

The chemistry, physics and math courses taken during the first three years by students working toward the new BS in textile chemistry degree are identical, with one or two minor exceptions, with those taken by students majoring in chemistry. During the freshman year the course requirements for chemistry and textile chemistry majors are identical. Textile chemistry majors take the same courses in analytical chemistry, organic chemistry, physical chemistry, calculus and physics during their sophomore and junior years as do chemistry majors. In the Textile School, courses in textile design, yarn manufacturing and textile chemistry are introduced. During the senior year, textile chemistry students take, in addition to textile courses, such as weaving, physical testing, synthetic fibers, costing and dyeing and finishing and printing, work in instrumental methods of chemical analysis and air and water pollution.

Anderson

Birch Bros Appoints Canadian Representative

H J Anderson & Co has been appointed by Birch Brothers, Inc, Somerville, Mass, as exclusive representative in Canada. Birch Brothers, Inc manufactures expander rolls for cloth, paper and plastic webs as well as textile finishing machinery and textile mill sewing machines.

The appointment is designed to broaden and extend the quality and completeness of Birch Brothers service to the trade. H J Anderson & Co, of which Mr Anderson is president, serves the primary and secondary textile industries and the paper and plastic industries with both machinery and supplies. It was established last year.

Canadian firms interested in sales and service on all Birch Brothers machinery should contact H J Anderson & Co, 191 Eglinton Avenue East, Toronto 12, Ontario.

•

1st International Dyestuffs, Finishes and Auxiliaries Exhibition

The First International Textile Dyestuffs, Finishes and Auxiliaries' Exhibition is to be held at the Free Trade Hall, Peter Street, Manchester, England on the 22nd and 23rd of September this year.

The Exhibition is expected to fill a long-felt need in this section of the textile industry, in giving manufacturers a "shop window" for the display of their products. The interest of overseas manufacturers in the British market is reflected by the international nature of the Exhibition.

In addition to the Exhibition, in the Lesser Free Trade Hall (under the same roof as the main Exhibition) there will be a program of films shown by manufacturing companies, and on one of the days, a symposium relating to new developments in textile chemicals.

The Exhibition will be an "annual," returning to Manchester every three years. The intervening two years the Exhibition will be staged in Yorkshire (1961) and London (1962).

Textile Industry Dramatized in New Burlington Movie

The importance of the textile industry in American life has been dramatized in motion picture form by Burlington Industries, world's largest textile manufacturer.

"The Patterns of Progress", a twenty-five-minute color film, produced for Burlington by MPO Productions, is now available to the public on free loan from Modern Talking Picture Service, New York, and its thirty regional film libraries.

To obtain an accurate picture of the complex textile industry and its importance in American life, the MPO team spent months researching Burlington's diverse operations in the many communities where plants are located. A highly informative sequence in "The Patterns of Progress" is a filmed visit to a southern town which graphically illustrates the typical and vital role played by Burlington and its 60,000 employees in more than 90 plant communities. Other sequences show the diversity of products created from 27 natural and man-made fibers.

•

Pimelic Acid Available in Development Quantities

New polyester and polyamide resins and fibers may soon be made with pimelic acid now available in developmental quantities from American Cyanamid Company.

A seven-carbon, saturated, dibasic acid, pimelic acid reportedly exhibits the phenomena of a lower melting point and greater solubility that are associated with dibasic acids with odd numbers of carbon atoms. These properties may modify the behavior of its polyester and polyamide polymers as compared with the behavior of similar polymers made from adipic acid.

Because of its previous unavailability in any considerable quantity, pimelic acid has not yet been studied intensively in such plastic and fiber applications.

A white, crystalline solid, pimelic acid undergoes chemical reactions typical of those for members of the dibasic acid series. It will react, for example, to form amides that can be easily dehydrated to nitriles. Pimelic esters can also be formed with equal ease. These products may be potentially useful as plasticizers.

Samples and technical information may be obtained from petrochemicals department, American Cyanamid Co, 30 Rockefeller Plaza, New York 20, NY.

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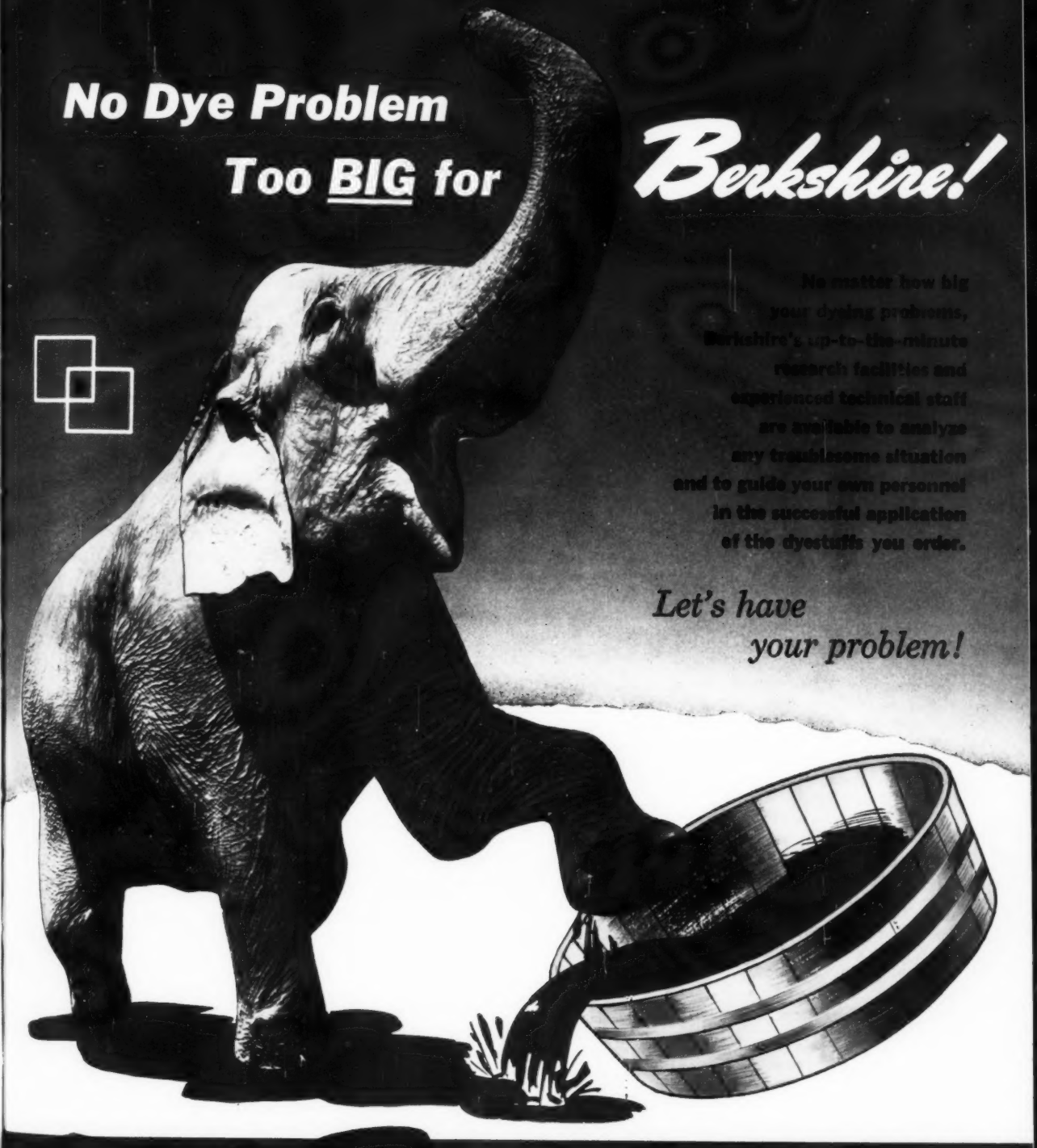

No matter how big your dyeing problems, Berkshire's up-to-the-minute research facilities and experienced technical staff are available to analyze any troublesome situation and to guide your own personnel in the successful application of the dyestuffs you order.

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- Highly Satisfied Customers — as Evidenced by Steadily Climbing Sales Curve

Organic Chemical Starts Fourth Building in 7 Years

Construction of its fourth building since moving to East Providence, RI, seven years ago has been started by Organic Chemical Corp.

The 5,000-square-foot warehouse is being erected across the street from the company's offices and plant at 84 Valley St and is expected to be ready for occupancy this month.

Organic Chemical, which was organized in 1949 by Samuel S Stott, president and sales director; John J Sandilands, vice president and technical director, and John H Gormley, treasurer and sales and service manager, is making its fourth expansion of facilities with the conviction that "the dyeing, printing and finishing segment of the textile industry in New England will continue to offer the company a broad field of business opportunity."

The company started operations in rented space on Holden St, Providence, as a sales and service operation, moving to East Providence in 1953. It entered the manufacturing field three years ago and, as a result its staff has grown from six to 22 people.

The initial building in East Providence comprised 2,400 square feet. An extension of this building was the first expansion move. About three years ago a building to house laboratory facilities and offices was built.

The firm's products include a line of textile auxiliaries—softeners, synthetic detergents and optical bleaching agents—and a line of Rapidogen colors for the textile printing trade.

Its current entrance into the water and oil phases of colors for textile printing has necessitated additional space in the manufacturing plant which will be made available by the new warehouse facilities now under construction.

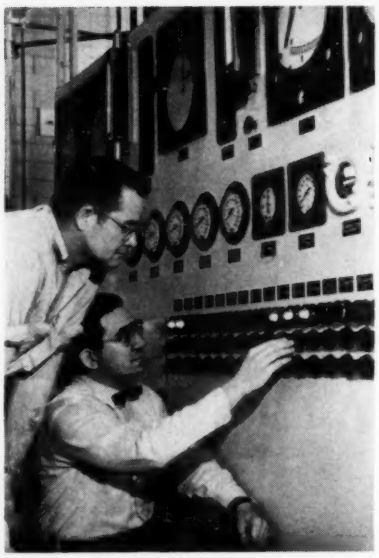
Organic Chemical also maintains a branch office, warehouse and service laboratory in the South. It was enlarged as of May 1 and moved from Charlotte to Concord, NC.

•

New Staley Pilot Plant Facility

A new pilot plant facility to speed development of modified starch products for the textile, paper and other industries has been put in operation by the A E Staley Manufacturing Co, Decatur, Ill.

A miniature starch-processing plant built to scale of full-size production equipment, the new pilot facility develops process data on research laboratory findings and produces semicommercial quantities of new starch products for market development use.



Automatic control system in new pilot plant facility for modified starch products at A E Staley Manufacturing Co boosts speed and accuracy in developmental production work. Project Chemical Engineer Robert Gaudlitz explains system to Supervisor Russell Wilber.

Automatic control instruments regulate the small-scale process equipment, including stainless-steel reaction tanks, filter, dryer, mixer, sifter and storage units, each duplicating commercial equipment in miniature.

The new modified starch pilot plant has a reported capacity output of up to 12,000 pounds daily, and is said to provide greater speed, flexibility, and precision control in developmental research and semicommercial production.

•

Final Papers Signed For Sale of Lestoil

Adell Chemical Co, Inc, of Holyoke, Mass, became Lestoil Products, Inc, on May 31 as final papers were signed closing the sale of Adell and its several subsidiaries to the new corporation. The stockholders of Lestoil Products, Inc include Standard International Corp, Andover, Mass, its owners and associates thereof. Sale price and terms of the contract were not disclosed. It is reported that 1959 sales of Adell Chemical were approximately $25,000,000.

Jacob L Barowsky, president and founder of the Adell Chemical Co, and new chairman of the board of Lestoil Products, Inc, signed the contract for his firms. John Bolten Sr, John Bolten Jr, and Daniel E Hogan Jr, signed for Standard International and its associates.

Daniel E Hogan Jr will be the president of Lestoil Products, Inc. Mr Bolten Sr will be chairman of the Executive Committee, which will also include Messrs Bolten Jr, Hogan, and Samuel Dennis III. John Bolten Jr will be treasurer and Mr Dennis will be secretary for the new corporation.

Other appointments were also announced: Charles J McCarthy, vice president in charge of sales; Gale Deam, vice president in charge of manufacturing and asst treasurer; I L Eskenasy, formerly executive vice president, will be executive asst to the Operations Committee; and Aaron Kingsberg, former controller, will be consultant in the new corporation. Edwin Stoltz has been appointed vice president in charge of research and development.

•

Dow to Produce 1,4-Dioxane

Availability in commercial quantities of the solvent 1,4-dioxane, which has uses in the textile industry, was announced recently by The Dow Chemical Company.

The solvent will be available in 55-gallon drum and tank-car quantities at a delivered price from Dow's plant in Freeport, Texas. Until now, Dow has produced 1,4-dioxane only for its own use.

A cyclic ether, the chemical is used in the textile industry as a wetting and dispersing agent, as a dyeing aid and as an extraction agent. Dow said the product also has shown potential utility as a spinning agent for acetate fiber.

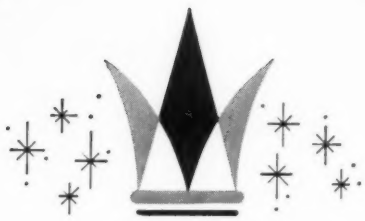
Soluble in water and a wide range of organic solvents, 1,4-dioxane is little affected by acids, alkalis and mild oxidizing agents, it is claimed.

•

Du Pont Dyes & Chemicals Div Receives AIA Honor Award

The Du Pont Company's Dyes and Chemicals Division on June 8 received one of four Honor Awards from the Association of Industrial Advertisers for its year-long advertising and sales promotion campaign designed to introduce the merchandising advantages of colored paper to U S paper mills.

Richard P Price Jr was advertising assistant on the award-winning Du Pont campaign. The advertising agency assisting him was N W Ayer & Son, Inc, of Philadelphia.



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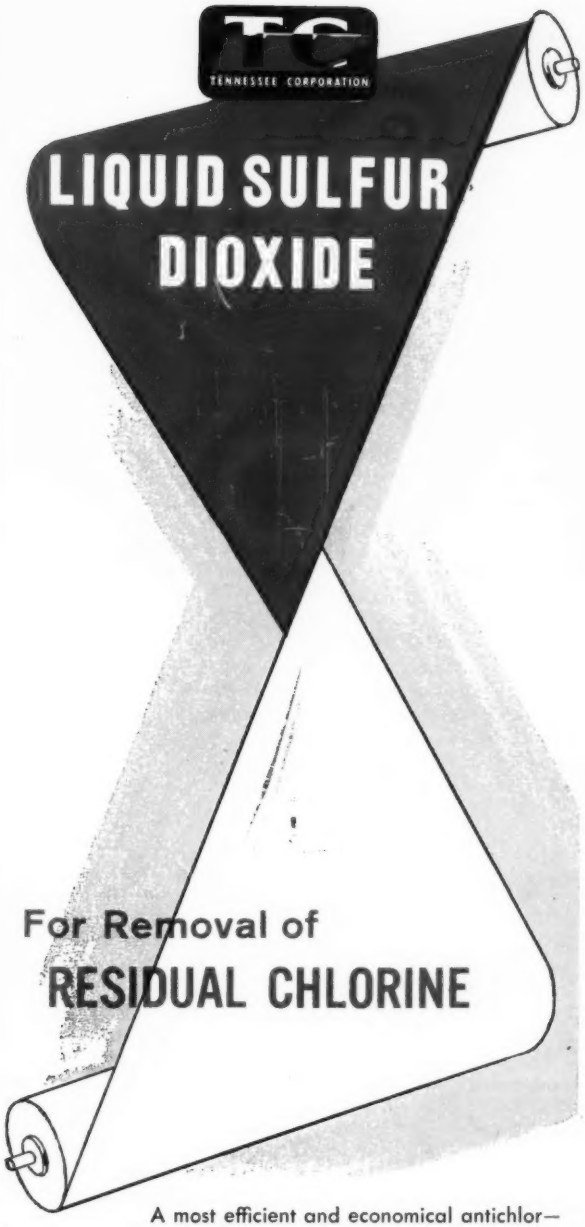

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Chemical Week Buyers Guide Pages 173-176
Chemical Materials Catalog Pages 551-554

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FMC Inorganic Application Labs

Full-scale testing facilities for chemicals used in textile, pulp and paper, metallurgy, detergent, and other applications are in operation in Food Machinery and Chemical Corp's Chemical Research & Devolopment Center at Princeton, NJ.

The newly installed inorganic aplications sections are directed by Fred R Sheldon, general manager, and provide technical service for customers of FMC's Becco Chemical, Chlor-Alkali and Mineral Products Divisions. Textile applications are headed by B K Easton, pulp and paper by R R Kindron, metals by P H Margulies, and detergents by H H Young. W H Kibbel and R J Gall are responsible for other industrial applications of interest to FMC's Inorganic Chemical Divisions.

The inorganic applications department is part of FMC's chemical center in Princeton, which also includes organic research groups, central research service facilities, and complete patent, library and other services to serve all of FMC's diversified chemical operations.

•

USTC Extends Export Sales Agreement with Ameresco

United States Testing Company, Inc, recently extended its agreement with Ameresco Inc, Montclair, NJ, to include exclusive export sales of the instruments and apparatus marketed by its Standards Division.

The large stock of pretested and calibrated apparatus maintained by U S Testing Co at its Standards Division in Hoboken, NJ reportedly will permit Ameresco to make overseas shipments. Among the wide variety of items stocked are thermometers, hydrometers, viscometers and graduated glassware, gauging tapes, constant temperature baths, cloud and pour test apparatus, standard samples, and test strips. Ameresco will continue to handle all export sales of the Company's certified fugitive tints and testing instruments.

Recent instruments developed by U S Testing Co include the Scanor-Tron and the Wool Staple Length Recorder. The Scanor-Tron, an electronic cotton classer, measures five distinct qualities of each cotton sample: brightness, color, character, amount of foreign matter, and size of foreign particles. It reportedly is possible to give a complete test, including the printing of a report, in less than ten seconds. The Wool Staple Length Recorder is said to electronically measure staple length to an accuracy of 1/10 of an inch and also print this information on paper tape. Both instruments reportedly serve to eliminate the possibility of human error in classing these particular fibers.

Wool Staple Length Recorder

•

Heyden Newport Building New Tall Oil Plant

Heyden Newport Chemical Corp recently awarded a contract to Foster Wheeler Corp to build a 24,000 ton per year tall oil refining plant at Oakdale, La.

The new plant, expected to go on stream early in 1961, will be the corporation's second tall oil plant, converting crude tall oil to higher grade products marketed by the corporation's Newport Industries Co division. The new plant will augment the production of already existing facilities in Bay Minette, Ala, which have a capacity of 36,000 tons per year.

The new Heyden Newport plant will produce tall oil rosins, tall oil fatty acids and distilled tall oils.

The use of tall oil has tripled in the past ten years. Industry's consumption of crude tall oil, a product of the kraft paper sulfate process, may reach 300,000 tons this year as against 102,500 tons in 1949. The average annual growth for 10 years, industry sources estimate, has been about 11%.

Tall oil rosins are used mainly for synthetic resins and paper size. Tall oil rosins production increased more than 13 percent between 1958 and 1959 and the demand is still increasing.

The greatest commercial use of tall oil fatty acids at the present time is by the paint and varnish industry. They are also used in the production of textile oils.

Oxone Price Reduction

Du Pont recently announced a price reduction of five cents a pound for Oxone monopersulfate compound, its new oxygen-type bleaching agent.

The move brings the new truckload price for Oxone to 30 cents a pound. This is a reduction of more than 14 percent from the introductory price when the plant to manufacture Oxone was completed at Memphis, Tenn, in June 1959.

A product of Du Pont's research in peroxygen chemistry, Oxone was reportedly developed to meet the demand for an odorless dry bleach that is effective but safe for all modern fabrics.

•

M & R Opens Wis Sales Branch

A new chemical sales branch and warehouse has been established at Appleton, Wis, by the Chemical Department, McKesson & Robbins, Inc.

The Appleton Chemical Branch, which opened May 13, is located at 1836 Rogers St. The branch will serve the chemical needs of manufacturing customers from Sheboygan, north through the Upper Michigan peninsula.

Herbert E Luecke has been appointed branch manager. He will be assisted in the sales department by Morrison A Minor and in the office by Norman R Oost.

McKesson & Robbins now has 49 chemical branches located from coast to coast. Its Milwaukee Branch, formerly a unit of Merchants Chemical Co, has been in operation for over 35 years. All of the chemicals previously shipped from Milwaukee will be warehoused in the Appleton Branch, which also has storage tanks for aqua ammonia, sulfuric acid and muriatic acid.

Important date

MONDAY—5 P.M.

29

AUGUST

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HOWES PUBLISHING COMPANY • 44 E. 23rd St., N.Y.C.

International Wool Development Company Begins Operations

A world-wide research and product development organization for the wool industry has begun operations.

The new organization is tentatively known as The International Wool Development Company. It will sponsor wool research and pass on the benefits of this research to mills, manufacturers and other components of the wool industry.

It has been indicated that the new nonprofit company will spearhead the most systematic world-wide sponsorship of wool technology ever undertaken. It is being established by the wool boards which represent wool growers of Australia, New Zealand and South Africa.

In the United States, a division of the international organization, operating as a separate and independent corporate entity, will take over the functions of the Department of Science and Technology of The Wool Bureau, Inc. Gerald Laxer, currently director of the department, will head a much enlarged technical staff in the new U S development corporation. The Wool Bureau, which is primarily a promotional and public relations organization, will concentrate and expand its activities in these areas.

Chief functions of the development corporation will include the acquisition of inventions for new processes and finishes; patenting, developing and licensing these inventions; and providing a technical advisory service to woolen mills and other elements of the wool industry in order to encourage the adoption and marketing of the new techniques.

The Development Corporation is expected ultimately to operate in most of the 17 countries where the International Wool Secretariat now functions. The IWS is the administrative body for the International Wool Publicity and Research Fund, to which the Wool Boards of the British wool-producing commonwealths contribute.

In the United States the development organization will take over some noteworthy projects in wool technology currently in progress. One such development is a process for setting permanent creases and pleats in wool garments. Originally known as Si-Ro-Set, the permanent creasing solution is now being applied to wool garments sold through some 2500 retail outlets in the United States.

Other current research projects include research in the basic characteristics of the wool fiber; the development of lightweight wool worsted suiting fabrics which, it is claimed, will be wrinkle-resistant without resort to chemicals; and the engineering of wool fabrics which will be washable in home laundry units without felting shrinkage.

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New Patent Abstract Service

Patent Intelligence File Co, New Haven, Conn, introduced in April a day-to-day service. The Company will supply any of the 2,000,000 Patent Abstracts on 7″ × 10″, three-hole-punched loose leaf sheets. These copies reportedly are exactly as published in the U S Patent Office Official Gazette over the past 40 years. On a free service account basis, the Company will watch currently, and search back year art for patent intelligence ordered by patent numbers, inventor and company names. classes and subclasses or types of patents. A standard price is made for each abstract supplied. Patent idea files reportedly can be secured and maintained on any subject or phase of that subject.

Another division known as "World Abstract and Idea Exchange" serves in the same way. Abstracts on some 300 to 400 subjects of world knowledge (arts, science, industry, government, etc) are submitted by members on 7″ × 10″ sheets. The abstracts are to be screened by a specialist for each subject, so that only new and progressive ideas may be copied for mailing to members registered for a specific subject or subjects.

Literature on both services is available from Patent Intelligence File Co.

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Kenyon Piece Dyeworks Magazine

Kenyon Piece Dyeworks, Inc recently began publication of a new bimonthly publication for its employees, entitled the Kenyon "Clover Leaf".

Raymond Curtis, president, in a note introducing the publication, cited the magazine's chief reason for existence as "the promotion of good communications between employees and management".

One of the features of the magazine is a series of articles about Kenyon's various departments, the first of which described the operation of the greige room. Theme of the series is "each job at Kenyon depends on every other job". Other features include a column entitled "What's New in the Trade" and another entitled "What's New at Kenyon".

Phi Psi Offers Services as Clearing House for All-Textile PR Effort

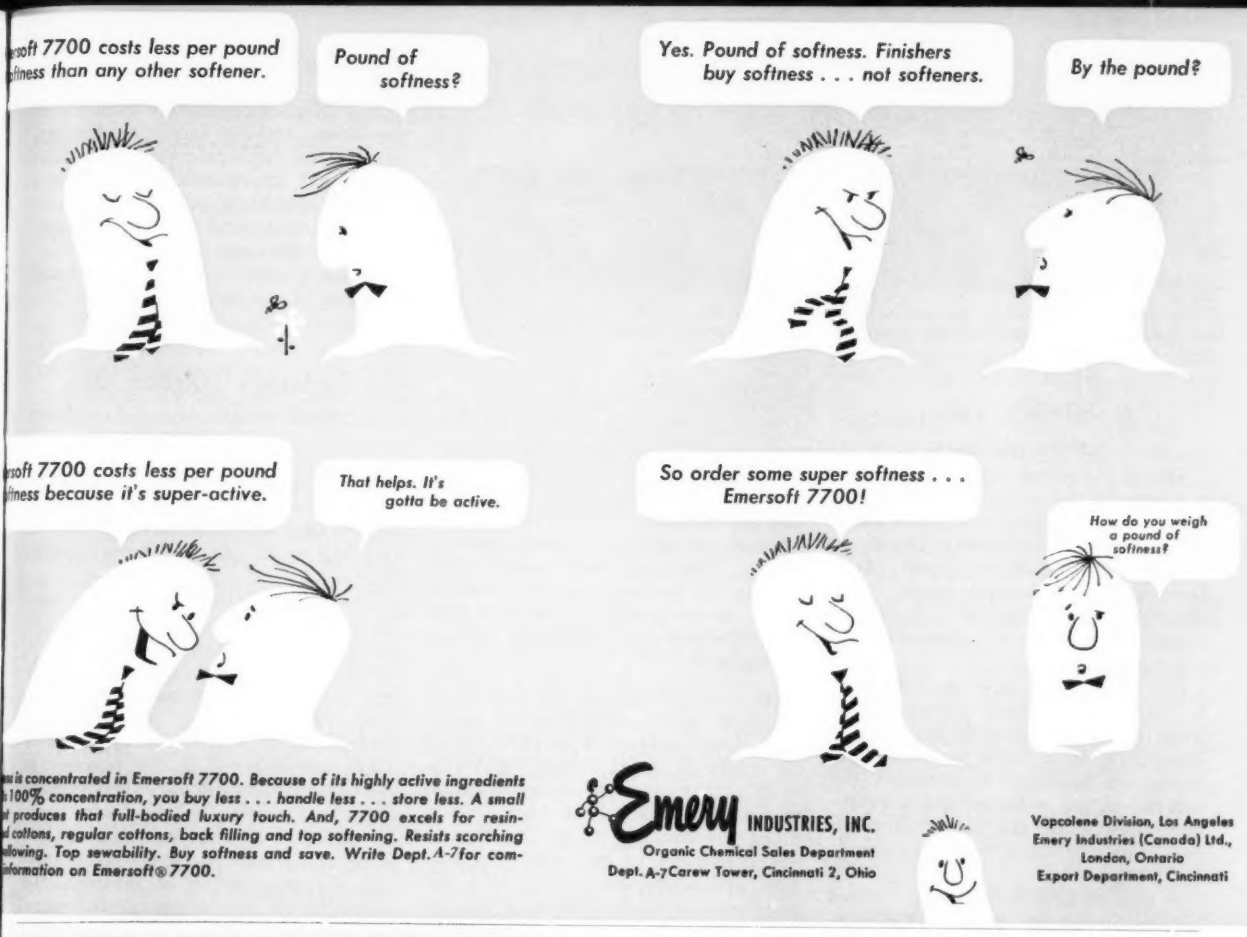
Although enrollment in textile colleges has dropped significantly in the past five years, the colleges themselves expect enrollments to increase in the next five years, according to a survey completed by Phi Psi.

In announcing the survey results, Phi Psi vice president George L Logan, advertising manager of Veeder-Root, Inc, said, "In spite of the individual efforts of many well-intioned organizations, there still remains a big void: lack of a coordinated public relations program for the textile industry. Phi Psi, the world's leading professional textile fraternity, should be prepared to act as a focal point for such activity, in the best interest of our industry."

Survey results were summarized as follows:

1) *Why has there been such a marked drop in enrollment of textile students?* Lack of a good publicity program by the industry, lower starting salaries, and longer hours.
2) *Would a change in curriculum be advisable in order to better educate a student so that upon graduation he would be more in demand by textile concerns?* No. Demand for graduates is high, and curricula have been changed in keeping with industry demands for less technical knowledge and more emphasis on basic science and the humanities. The main problem is to attract more freshmen.
3) *How can new interest be developed to stimulate greater enrollment in textile colleges?* Better publicity and public relations aimed at the general public and, more specifically, at high-school students and their guidance directors.
4) *How has enrollment fared over the past five years, and what about the next five years?* Down 26% from 1954 to 1959. Next five years: generally optimistic about a reversal of the trend.

Noting that the trend will not be reversed unless some positive action is taken, Mr Logan said: "It's up to someone to take leadership position to draw together the efforts of various schools, associations, and individual companies. An unbiased organization such as Phi Psi, dedicated to the improvement of the textile industry, appears to me to be an ideal choice for the job."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Architect's elevation of the proposed Merrimack Valley Textile Museum, which will be devoted to the history of the American wool industry. Construction is expected to begin this summer.

Merrimack Valley Textile Museum

The creation of a new museum, dedicated to the history of the American wool industry, was announced recently by the Advisory Board of the Merrimack Valley Textile Museum in North Andover, Mass. Construction of the $150,000 building to house the museum is expected to begin this summer.

Exhibits in the new museum will tell the story of wool manufacturing from the earliest times to the present. In addition to exhibits, there will also be an archives to preserve the records of the industry and a reference library for the use of museum personnel and other interested scholars.

A total of $100,000 had been raised for the project by April 1. The museum's Advisory Board hopes to secure additional financial assistance from individuals and firms within the industry which the museum will serve. Funds are needed for the museum, as well as for endowment, exhibits, and reference material.

The museum will be located in the historic heartland of the American wool industry. In nearby Byfield is the site of America's first fulling mill, built in 1643. In North Andover itself is the oldest woolen mill in America in continuous operation, started by James Scholfield in 1802. The town is also the location of the original Nathaniel Stevens Mill, begun in 1813, and the birthplace of today's J P Stevens and Co, Inc.

The major emphasis of the museum exhibits will be on the transitional period from hand to machine manufacture of wool textiles. Early looms, spinning wheels, and related devices will tell the story of cloth-making in colonial America. Trained guides will demonstrate early techniques and the visitor will be able to try his hand at spinning yarn or weaving a piece of that itchy, long-wearing colonial fabric, linsey-woolsey. The museum already possesses a good collection of objects with which to portray early methods of manufacturing. However, materials are needed to show the evolution of technology within the industry, and anyone knowing the whereabouts of relevant historical materials are urged to contact the director of the museum. In addition to early machinery, photographs, drawings, and models will help to tell the story of the development of machines and mills and of the industrial revolution they created in America.

By concentrating on the history of the wool textile industry, the Advisory Board expressed its keen desire to create a unique museum which could make a genuine contribution to the knowledge of our past history. Since the history of the industry is not preserved in any other institution and since this locale was the main area of concentration of the industry for more than a hundred years, it seemed most logical to build a museum of the subject there. The museum's archives and manuscript collections will provide the institution with the materials for scholarly research. By comparison, the museum's exhibits will be designed and constructed to appeal to the touring public, the visiting school group, and the individual visitor.

The original inspiration and support for the museum has come from the North Andover Historical Society. However, the museum has begun incorporation proceedings and with its own Advisory Board will become an independent, nonprofit, educational institution. The present members of the Board are; Mrs Horatio Rogers, president of the North Andover Historical Society; S Forbes Rockwell, of Davis and Furber, manufacturers of textile machinery; Ames Stevens, of Ames Textile Co; John Rogers Flather, long connected with the Boott Mills of Lowell; Prof Ralph W Hidy, of the Harvard Business School; Horace N Stevens Jr, vice president of J P Stevens & Co, Inc; Walter M Whitehall, director of the Boston Athenaeum; Robert W Lovett, manuscript librarian of the Harvard Business School Library; Horatio Rogers and Francis B Kittridge, both of North Andover; and Bruce Sinclair, executive director of the North Andover Historical Society, serving in an *ex-officio* capacity. Additional appointees to the board are anticipated, especially from the museum field, and the project continues to develop.

Bruce Sinclair has been appointed director of the new museum.

●

Carbide's Silicone Div Process Development Building Completed

Silicones Division, Union Carbide Corp, recently announced the completion of a new process development building at its plant in Long Reach, W Va.

The new building, which is a three-story structure, 155 by 66 feet, is equipped for a variety of work. It contains equipment for both batch and continuous processes, high pressure experimentation, reactions and distillation of a wide range of products encountered in the processing of chlorosilanes, the various polymers and end products derived from them. In addition it contains semiworks-scale equipment for scale-up studies and the preparation of intermediate quantities of new materials for market exploration. There is also office space for engineering and supervisory personnel.

Process development activities, previously located at the Division's laboratory in Tonawanda, NY, have been transferred to Long Reach. Most of the members of this group moved from Tonawanda to Long Reach before completion of the building. The Division's research and product development activities continue at Tonawanda. Headquarters of the Division is in New York.

C W Rehm, formerly process development manager, is now superintendent of production at the plant. He was succeeded by R F Kayser.

Move of the process development group to West Virgina was in the interest of closer integration and coordination with production facilities in this relatively new branch of the chemical industry. The Long Reach plant, which is said to be the most modern silicones-producing facility in the United States, went "on stream" in late 1955. Among the newest products derived from its process development efforts are the Division's Silrama process for dyeing glass cloth in varied colors; antifoams; and surfactants for use in making polyurethane foam.

Sharprint

Increased color yield from disperse dyes on polyester fibers is the promise of Sharprint, a carrier developed by The Harshaw Chemical Company. Maximum sharpness and clarity of print are additional benefits the printer can expect from this new product, it is claimed.

Sharprint is described as a free-flowing white paste which may be added directly to the print color paste by volume, eliminating the need for any preweighing or mixing of the carrier.

Harshaw Sharprint Carrier is said to perform efficiently in the many methods available to the textile printer. After goods are printed, one of three processing methods may be utilized: 1) cottage steaming, 2) aging, or 3) curing. There reportedly is no sacrifice of sharpness of print in either wet or dry method of fixation. Wet heat processing encountered in steaming or aging is said to offer maximum brilliance with improved color yield. Excellent color yield can be obtained on curing if the fabric is submitted to a minimum of 300°F for five minutes, the manufacturer states.

It is claimed that with Sharprint, the printer using disperse dyes on polyester fiber can avoid difficulty in getting full color value and sharpness of print on his patterns. Additional information can be obtained from The Harshaw Chemical Co, Zinsser Div, Hastings-on-Hudson 6, NY.

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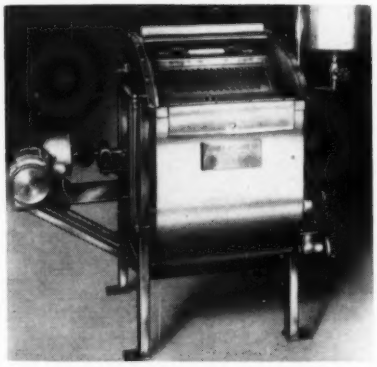
Turbo Rotary Hosiery-Dyeing Machine

The new Turbo Rotary-Hosiery Dyeing Machine, model 12-RD-60, shown for the first time at the American Textile Machinery Exhibition in Atlantic City, May 23-27, eliminates all gears and bearings within the vessel.

The machine has a new modern drive arrangement on the outside of the tank. It is said to be unnecessary to disassemble the equipment for repairs or replacement of parts. End frames are stainless steel.

The new machine is made in a wide range of capacities, from four to 250 lbs per batch. It is enclosed by stainless-steel cover with sliding-type door.

An overflow is placed the full length of the tank at rear to permit flushing off all scum and dirt from the surface of the liquor.



Turbo Rotary Hosiery Dyeing Machine

The machine is equipped with quick-opening stainless-steel drain valve, water inlet connection, dye feed funnel, drawoff spigot, thermometer, and water gauge. Steam for heating the bath is admitted through stainless-steel perforated pipes, arranged to insure uniform heating throughout.

Turbo has announced also improvements in its high-pressure package-dyeing machines. Featured is a new pressurized expansion tank, which is said to be the latest available for handling any type of package process. A new patented reversing valve can be serviced from inside the dye kier if necessary.

The patented Steverlynck System, used in Turbo package-dyeing machines, provides an over-pressure to the suction side of the pump to keep it operating efficiently through both the heating and cooling cycles. This reportedly results in uniform flow of dye liquor through the packages, increasing uniformity of dyeing results and greatly reducing dyeing time.

A sample package kier and dye feed kier are said to make it possible to take samples and feed dyes at temperatures above the boil without shutting down the process.

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D & A Expands Daxad Capacity by 20%

Manufacturing capacity for the Daxad dispersing agents of the Dewey and Almy Chemical Div, W R Grace & Co, Cambridge, Mass, has recently been expanded by 20%.

The new equipment has been added to the existing Daxad facilities at the division's Cambridge headquarters plant.

Resyn 3600

National Starch and Chemical Corp, 750 Third Ave, New York 17, NY, recently announced the perfection of a water-system, latex form of polyvinylidene chloride resin that is said to be highly stable and will, when used as a coating material, impart a combination of outstanding barrier and protective properties.

This new material, called Resyn® 3600, reportedly can be applied at low cost to a variety of porous and nonporous substrates by standard coating equipment. Furthermore, National said, all the protective properties polyvinylidene chloride film are completely retained in the final coated surface.

Among these properties, National stressed the new coating's extreme resistance to transmission of water vapor and common gases, such as oxygen, nitrogen and carbon dioxide.

According to Donald Pascal, president, immediate applications for Resyn 3600 will be in the paper, corrugating and packaging fields. Subsequent uses, he said, should develop soon in the textile, agricultural, construction, adhesive, and many other product lines.

National is now constructing a special facilty at its Meredosia, Ill, plant which, when it goes into production sometime early this Fall, should be able to supply some 14 million pounds of the new resin annually. Plans also have been made to expand this capacity to accommodate the expected increase in demand.

Mr Pascal said this could be considered a major advance in resin technology. More than five years of research and development work and more than a million dollars have been invested to make this new product available, he said.

Chemical and water resistance, combined with nonflammability, nonblocking, flexibility, drycleanability, wash resistance and other of its key properties should secure wide usage for Resyn 3600 in the textile industry, National stated. The new resin may be used for coating, impregnating and as a nonwoven binder particularly for industrial fabrics. Fabrics of this type are used widely as shoe linings, filter cloths, insulating, awnings, tarpaulins, interlinings, felts and carpets.

Patent Application Covers New and Improved Ultrasonic Methods of Dyeing

An application for a patent, which is expected to be of interest to the dyeing industry, has been filed in the U S Patent Office by Ethel R Fleming, director of research, B M Harrison Electrosonics, Inc, Newton Highlands, Mass. The patent will be assigned prior to or immediately following issuance to the Company. Harrison Electrosonics will hold the exclusive manufacturing rights.

It is reported that new and improved ultrasonic methods and equipment are designed to insure the quick and deep penetration of dyestuffs into natural and synthetic fibrous materials and to permit dyeing by a continuous flow method. The process is designed to reduce the weight and size of the material handling equipment and eliminate the heavy walled vats necessary in contemporary high-pressure methods and simplify the problem of producing uniformity of colors, it is claimed.

The Flemington-Harrison process reportedly employs ultrasonics to achieve a negative pressure to release entrapped gases in the cells of fibers. Each peak of negative pressure is closely followed by a high degree of positive pressure, which reportedly forces the dyestuffs into the interstices vacated by these gases. Used in combination with elevated temperatures, 20 to 30 degrees below the boiling point of the solution, and electronic means for controlling the concentration of the dyes, the system can produce a uniformity of color tone and saturation difficult to achieve by normal means, it is claimed.

The new methods have been developed by Mrs Fleming and exhaustive tests were made in the Newton Highlands plant of B M Harrison Electrosonics, Inc using wool and other organic and inorganic materials as a base for experimentation and refinement.

Mrs Fleming has collaborated with Bertram M Harrison, president, and other staff members of B M Harrison Electrosonics, Inc, in the research aspects of many sonar and sonic development programs over the past 15 years. She has contributed to new developments and studies of sonic application of high-frequency sound to decortication, retting and impregnation of cellular fibers.

It is reported that heavy production of ultrasonic dyeing equipment will constitute a considerable portion of the company's industrial manufacturing during the coming years, and will eventually displace government contracting work as its primary production area.

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Single-Bath Method for Dyeing Wool and Dynel Fabrics

New single-bath procedures for dyeing blended fabrics of wool and Dynel modacrylic, which reportedly reduce dyeing time by 50 percent and more, have been announced by the Textile Fibers Department of Union Carbide Chemicals Co, Division of Union Carbide Corp.

Developed by Carbide's Textile Service Laboratory in cooperation with Geigy Chemical Corp, the new methods are designed to attain good unions or cross dye effects on wool with Dynel modacrylic in blend fabrics for childern's wear, skirts, sportswear, robes and others where washability is required. When combined with recommended finishing techniques, the methods give resulting fabrics high washfastness, excellent hand and dimensional stability, the company reports.

According to Carbide, the procedures eliminate the traditional and time-consuming neutralizing step on carbonized fabrics prior to dyeing, and solve a primary difficulty in dyeing combinations of hydrophilic with certain hydrophobic fibers in a single bath. The problem has been that the anionic dyestuffs for the hydrophilic fibers and the cationic dyestuffs for the hydrophobic fibers are not compatible in the same bath. Dyers who have attempted single-bath methods have faced problems of precipitation, "gummy" deposits, "blotchiness" and other familiar dyehouse woes.

The new method relies on two chemicals in the recommended dyeing procedure—Tinegal RWI, manufactured by Geigy, and Peregal TW, distributed by General Dyestuff Co. Tinegal RWI reportedly ensures level dyeings in an acid bath using the weak-acid or neutral-dyeing wool dyestuffs. It also permits shade corrections with these dyestuffs near the boil. Peregal TW functions as an antiprecipitant, helping to maintain anionic dyes for wool and cationic dyes for Dynel in a finely divided state throughout the dyeing cycle.

Using the procedures in extensive mill dyeings for 70% wool—30% Dynel blends, Carbide technicians report a reduction in dyeing time from more than eight hours for a two-bath method to between two-and-a-half and four hours for the new method.

This means that it can make possible more dyeings per shift than with the two-bath method, the company states. In addition to the gain in efficiency of men and machines, the new method reportedly allows good leveling and thus delivers better fastness on bright colored washable woolens.

Further information on the one-bath dyeing method for washable wool and Dynel blend fabrics is available directly from the Textile Fibers Department, Union Carbide Chemicals Co, 30 East 42nd Street, New York 17, NY.

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Sirius Supra Yellow GRLL

Verona Dyestuffs, Union, NJ, has added a new fast-to-light direct yellow to its line under the name of Sirius Supra Yellow GRLL. The new product is said to be distinguished by outstanding lightfastness combined with good leveling properties and excellent solubility.

For green combinations, the combination of Sirius Supra Yellow GRLL and Sirius Supra Blue F3GL-CF are highly recommended by Verona Dyestuffs for outstanding lightfastness without any "cannibalizing" effect as far as the blue component is concerned.

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National Lanamid Grey GBL

The addition of National Lanamid Grey GBL to its line of neutral-dyeing premetallized dyes has been announced by Allied Chemical's National Aniline Division.

National Lanamid Grey GBL is substantially equal to Lanamid Grey G in washfastness and fastness to light, reportedly having very good fastness to both. Also, it is said to have better level dyeing properties than Lanamid Grey G, good solubility at 1:40, and superior nondusting qualities.

National Lanamid Grey GBL is priced at $4.65 per pound in 250-pound barrels. Samples are available upon request from National Aniline Division, 40 Rector Street, New York 6, NY, or branch offices.

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Pliovic WO

A specialty vinyl dispersion resin for compounding quality plastisol and organosol formulations for a variety of end-use applications has been introduced by the Chemical Division of The Goodyear Tire & Rubber Company.

The new product, Pliovic WO, is said to be a unique resin which imparts highly desirable flow and gelation characteristics to compounds for knife, roller and dip coating, plastisol gasketing, roto-cast and slush molding.

Potential areas of use include fabric coatings for awnings, upholstery, lawn furniture, seat covers and industrial household gloves.

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MAPO

MAPO, tris [1-(2-methyl) aziridinyl] phosphine oxide, is being offered commercially for the first time by Interchemical Corp. This reactive trifunctional compound is supplied as a liquid with a minimum assay of 92% and requires no solvents or stabilizers, it is stated.

The many diverse applications of MAPO have aroused widespread interest. Because it will react with active hydrogens, it is an efficient crosslinker and its successful crosslinking of carboxyl-containing polymers makes it potentially useful in textile finishing systems, including durable functional finishes, nonwoven fabric binders and related applications.

Through a recent series of articles on applications in "wash-wear" and fire-retardant finishes, the lower analogues of MAPO have also received considerable attention. While MAPO has been found to be somewhat less durable than these analogues, its reactivity and better stability should encourage further investigation in these fields.

Bulletins describing the chemistry of MAPO and its derivatives are now available. Requests for these brochures or for additional information should be directed to Interchemical Corporation, Commercial Development Department, 67 West 44th Street, New York 36, NY.

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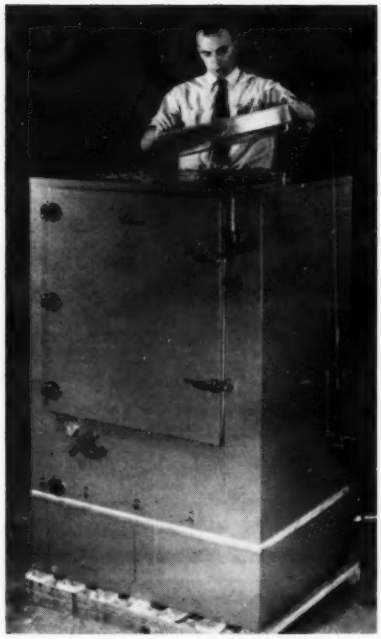
Resin BDC

Resin BDC, which is said to give a fuller, more luxurious body to nylon hosiery and increased snag resistance, is now being produced and marketed by W F Fancourt Co, 516 S Delaware Ave, Philadelphia 47, Pa.

The product may be used with Fancourt's other nylon finishes and lubricants. In belt, tray or air drying, nylon hose will not stick, it is claimed.

The Fancourt company states that Resin BDC is also adaptable to the conventional post boarding drying method.

Complete details may be obtained by writing to the company for a data bulletin.



Hotpack Drying Oven

New Textile Drying Oven

Electric Hotpack Co, Inc, 5026 Cottman St, Philadelphia 35, Pa, is manufacturing a new textile drying oven that reportedly allows skeins of material to be inserted, removed and inspected during operation without disturbing other specimens or environmental conditions within the chamber. Eight slots, located in the roof, house covers having an aluminum rod connected to their undersides for draping samples. Temperature range: 35°C to 260°C ± 0.5°C. Controls include an adjustable, automatic thermostat plus Limitstat, an overtemperature device that assumes command of heater circuits in event chamber temperatures exceed the control setting. Exterior is heavy gauge, cold-rolled steel, treated against rust, finished in baked enamel. Interior, 24″ × 20″ × 30″, is 18-8 gauge, polished stainless steel. Unit comes with two removable shelves.

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New CFMC Dyes

Francolor Inc, Division of Compagnie Francaise des Matieres Colorantes, Paris, France, has announced the addition of several dyestuffs to the CFMC line.

Acetazol Black JBZ (patented SGDG) is an azo dye intended for package dyeing of acetate cakes. Use of this new dye is said to bring about a definite simplification of the dyeing while guaranteeing maximum stability of the dyebath. CFMC states that this product resolves the problem of dyeing all qualities of acetate difficult to penetrate. It is also said to be suitable for the dyeing of cellulose triacetate.

Neutrogene Black J completes CMFC's range of Naphtazol-fast base combinations, which are developed by neutral steaming and used especially in printing. It is said to give excellent results in combination with reactive dyestuffs, such as "outline blacks", and the printing pastes are noticeably more stable than those prepared with Neutrogene Black B. The blacks obtained reportedly have an excellent yield, and a good fastness to light and washing. Under action of chlorine, Neutrogene Black J is degraded without any change in shade, it is reported.

Solanthrene Printing Brown 3R Paste Fine, a new vat dyestuff for printing, is said to be useful in all printing processes. Other advantages claimed for this product by CFMC are as follows: 1) no decrease in the resistance of the cellulosic fibers under the action of light; 2) rapid fixing on steaming; 3) good leveling; 4) stability of shade in artificial light; and 5) very good fastness to light, washing and chlorine.

Solanthrene Olive Green F-2J Neopowder is a new homogeneous vat dyestuff of a pale and yellowish shade, which is said to possess excellent fastness properties. It is claimed to be particularly suitable for articles which are to be subsequently boiled out and bleached with chlorine (except with sodium chlorite) and with peroxide. Because of its excellent fastness properties, CMFC recommends its use on materials such as tent cloths, furnishing goods, awnings and similar materials. It is also an interesting element for obtaining khaki shades. It reportedly may be applied by all classical processes, and its neopowder form is said to make it suitable as well for dyeing in reduced bath as by pigment processes.

Solane Blue BJ is similar to Solane Blue R, except that its shade is more greenish. Tinctorial properties and fastness of the two colors are identical otherwise. Solane Blue BY is recommended by CFMC for the realization of economical medium and dark blue shades, particularly for work clothes.

Fast Chrome Red JRL reportedly is differentiated from existing brands of similar shade by its brightness. Its principal qualities are said to be its economy and good leveling, brightness, and fastness to light and wet treatments.

Further information may be obtained by writing Francolor Inc, 148 Hamlet Ave, Woonsocket, RI.

Onyxsan FW-25%

A new cationic softener has just been developed by the Onyx Chemical Corp, Jersey City 2, NJ.

Called Onyxsan FW-25%, this product reportedly will disperse in tap water, thereby eliminating the necessity of boiling or cooking with open steam, as is the case with most cationic softener pastes.

Onyxsan FW-25% is white in color, and is said to have high resistance to discoloration. Among the suggested uses are as a lubricant for acid fulling, an exhaust-type softener for long bath applications and a yarn and skein lubricant following dyeing.

Product literature and samples are available from Onyx upon request.

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Rhoplex HA-8

Excellent durability to laundering and drycleaning, inherent flexibility, superior stability, high film strength and other improved properties are claimed as outstanding features of a new acrylic resin dispersion, recently announced by Rohm & Haas Co, Philadelphia. The new resin, known as Rhoplex HA-12, is described as a self-crosslinking polymer, closely related in performance to the company's Rhoplex HA-8, a low-temperature-curing acrylic resin which has been in commerical use for several months.

R G Thomas, head of the company's Textile Chemicals Sales Department, states that the new resin may be crosslinked simply by the addition of a catalyst—such as Catalyst A—and curing at low to medium temperatures. Films formed of Rhoplex HA-12 are firmer than those produced by Rhoplex HA-8, and the resin is particularly suggested for use where somewhat more firmness is desired than has been obtainable with the earlier product. Intermediate effects are readily achieved through various combinations of Rhoplex HA-12 and Rhoplex HA-8.

It is reported that Rhoplex HA-12 may be applied by spray as well as by saturation techniques in the production of nonwoven fabrics. It may also be used as a backing for automotive and upholstery fabrics where it reportedly imparts superior strength and slippage-resistance, along with unusual durability. Another application which is foreseen is the use of the product as a pigment binder for pigment dyeing and printing operations.

Rhoplex HA-12 is listed at 23¢ per pound in bulk; 25¢ per pound in truckload drums; and 25½¢ per pound in less than truckload drums.

Atlas Perspiration Tester Model PR-1

AATCC Perspiration Tester, Model PR-1

An inexpensive, compact AATCC perspiration tester, Model PR-1, is now available from Atlas Electric Devices Co, 4114 N Ravenswood Ave, Chicago, Ill.

The unit will test from one to 20 samples at a time. It is made of stainless steel with plastic plates and a metal weight.

The Atlas perspiration tester is vertically. After the top plate is locked in place with thumb screws, the weight is removed and the unit is turned over and placed in the oven in a horizontal position. A ten-pound dead weight loading is utilized with springs compensating for any shrinkage occurring as specimens dry out.

Separate units are recommended for use on acid and alkaline tests to prevent the possibility of interaction. A single weight will suffice when two or more units are employed in a single laboratory.

The Atlas Model PR-1 perspiration tester is 3″ × 8″ × 5¾″ high and weighs five pounds, excluding the dead weight. It is a standard stock item, available for immediate delivery.

•

Brilliant Alizarine Light Blue 3FR

Brilliant Alizarine Light Blue 3FR, a new member of the Sandoz range of Brilliant Alizarine acid dyestuffs, is of very bright shade. Of interest primarily for self shades, it is recommended by Sandoz for dyeing in the yarn or piece, especially baby blues, where the desired brilliance of shade cannot easily be obtained with other dyestuffs. Its high lightfastness on nylon and silk is also said to be worthy of note.

Cadon Multilobal Nylon Yarn

The Chemstrand Corporation last month announced Cadon as the name for its new multilobal nylon yarn. The multilobal shape of the fiber cross-section, which differs from the traditional round nylon filament, reportedly reflects light outwardly in such a way as to impart a desirable luster to the yarn and fabrics made therefrom.

Cadon reportedly has application in woven and knit goods alike for home furnishings, apparel and industrial fabrics. Chemstrand further announced that the yarn offers an increased range of fabric and styling effects for nylon.

The depth of luster imparted by the multilobal Cadon is said to enrich colors of fabrics and achieve unusual clarity. It reportedly accepts and sharply holds prints of delicate or strong patterns, as end use requires.

Additionally, fabrics of Chemstrand's Cadon are claimed to possess a luxurious hand and resilient texture with quick recovery. The yarn's superior covering power, as opposed to that of round cross-section nylon, permits greater opacity that makes possible lighter weight fabrics, it is stated. The multilobal yarn also is said to achieve greater wicking performance, particularly advantageous in apparel fabrics.

•

Asco Enclosed McLeod Gauge

The Asco Enclosed McLeod Gauge, a product of Arthur F Smith, Inc, 311 Alexander St, Rochester 4, NY, has attained "the ultimate in performance of a tilting-type table model gauge," according to a company spokesman.

Reportedly accurate for all permanent gases, it is individually calibrated against a standard vacuum gauge. The instrument measures three ranges; from 1 to 700 mm Hg, .01 to 1 mm Hg, and .0001 to .01 mm Hg. The gauge is rotated to read absolute pressure directly.

A low-frictional mechanical seal between the gauge and the connecting tube is designed to avoid twisting of tube when gauge is rotated, and to insure steady positioning when read.

The Asco McLeod requires approximately seven cc's of mercury, and all glassware is totally enclosed in a case protected by a plastic face plate and polyester back mounting. Mounted on an all-metal tripod stand, the unit is finished in gray hammertone. Price: $98.00.

• NAMES IN THE NEWS •

Gibian

Haden

Spencer

Lancaster

Corkum

Fields

The appointments of *Thomas G Gibian* and *Russell L Haden Jr* as vice presidents of the Dewey and Almy Chemical Div, W R Grace & Co, Cambridge, Mass, have been announced.

Both retain their current responsibilities. Gibian has been general manager of the Organic Chemicals Division, and Haden has been general manager of the Polyfibron Division.

•

New Bedford Institute of Technology at its recent commencement exercise at New Bedford, Mass, confered upon *Albert Malick,* president of Emkay Chemical Co, of Elizabeth, NJ, the degree of Master of Science, Honoris Causa, in recognition of his valuable contributions not only in his professional field but also in recognition of his exceptional effort in human relations.

•

William P Hagenbach has succeeded *Ralph E Fredrickson* as director of engineering research at A E Staley Mfg Co. Dr Fredrickson resigned after 18 years with Staley development engineering and had headed this activity since 1955.

For the past nine years Dr Hagenbach has been in engineering research with the Du Pont Company, where he headed various development engineering projects. At Staley's he will have charge of engineering research and pilot plant activities developing new processes and products from laboratory findings.

In Staley's manufacturing division, *W Harry Walmsley* has been named assistant general superintendent. *G James Dustin,* formerly technical superintendent, succeeds Mr Walmsley as plant superintendent.

Ellsworth E Kimmel, formerly with the Koppers Co in Pittsburgh for 11 years in chemicals and plastics development, has been named director of Staley's industrial market development department.

Emerson

Alfred W Spencer, of Sandoz, Inc, has been moved from the post of chief chemist, Chemical Div, New York Customer Application Laboratory, to that of supervisor of chemical sales for the Charlotte office. Mr Spencer joined Sandoz' Chemical Division staff in 1954 after having served as superintendent of dyeing for U S Finishing Co. A member of AATCC, he serves on the Committee on Washfastness as well as on the Piedmont Section Research Subcommittee on Mechanism of Odor Formation in Resin-treated Cellulosic Fabrics.

Edward J Lancaster Jr has been named manager of a newly created Sandoz sales district comprising most of South Carolina, and Georgia, Alabama, and eastern Tennessee. His headquarters will be in Charlotte and he will report to *F P Mackinney* District sales manager for the Southern territory. Mr Lancaster has been a Sandoz sales representative for dyes and chemicals for the past 14 years.

Jack H Emerson, who has been selling colorants in the South for Interchemical Corp for the past ten years, has joined Sandoz as a sales representative of the Dyestuff and Chemical Divisions. He has been assigned to the Charlotte office and will report to Mr Lancaster.

•

J Thomas Lindley, vice president in charge of the Burlington, NC, office of W F Fancourt Co, and has announced the birth of a daughter, *Mary Diane Lindley,* June 4.

Howard D Corkum, American Thread's director of research, terminated his active career with the company June 30, but will continue to serve on a consultant basis.

David H Fields, who has been assistant director of research since January 1, 1959, succeeded to the directorship on July 1.

Top company officials and key mill operating executives joined Mr Corkum's entire research staff at a testimonial dinner held in his honor at Willamantic, Conn, June 15. Chairman of the Board *P S Howe Jr* and President *E B Shaw* were among the principal speakers.

Mr Corkum first joined American Thread in 1943. At that time he personally organized the company's research laboratories and helped develop the quality standards now in use at the mills.

Other contributions include a key role in American Thread's "seam engineering program, the development of several American Society of Testing Materials testing procedures, and the preparation of many government thread specifications.

His career began in 1917, following his graduation from Brown University. He was first employed by Sayles Finishing as chief chemist and became superintendent a year later. In 1919 he joined DuPont's dyestuff division and in 1920 was put in charge of its Philadelphia Laboratories.

In 1922 he became chief chemist for The John Farnum Company and a year later he joined Amoskeag Manufacturing Co as chief chemist and superintendent.

He was made agent of Wauregan Quinebaug Co in 1936 and general superintendent of Goodall Worsted in 1940.

•

National Starch and Chemical Co (Canada) Ltd has announced the promotion of *John L Burton* to supervisor of technical service in Toronto. He has been with the Company since 1955.

Smith

The appointment of *T Dean Smith* to manager of the petrochemicals department of American Cyanamid Company was announced June 6.

In his new position, Mr Smith will be located in the firm's New York office and be responsible for all commercial operations related to the marketing of Cyanamid's petrochemicals. Mr Smith was assistant manager of the Fortier plant near New Orleans prior to this newest appointment.

●

A major administrative and marketing realignment consolidating all phases of marketing and sales of Miles Chemical Co, Elkhart, Ind, under one head has been announced.

W J Ferracone, formerly sales manager for Takamine Laboratory, has been named general sales manager of Miles Chemical Co. The present sales forces of Sumner Products and Takamine Laboratory will combine to become the basic sales force handling all Miles Chemical Co products, including enzymes, dialdehyde starch, fine organic chemicals, and citric acid.

Under the new plan, *L D Williams*, formerly sales manager of Sumner Products, will begin assignment as special projects sales manager with primary responsibilities for direct liaison with present and potential customers in the development of new and related products.

W E Irwin, formerly sales representative for Sumner Products in the Detroit area, has been named market research supervisor and will relocate in Elkhart in the near future. *J M Fergusson*, formerly New York Office administrative assistant to sales manager of Sumner Products, will become Eastern regional sales manager with offices in Clifton, NJ.

Miles Chemical Co, Division of Miles Laboratories, was formed in June, 1959, through the consolidation of Sumner Chemical Co, Zeeland, Mich; Takamine Laboratory, Clifton, NJ, and citric acid production in Elkhart. At that time, *H F Roderick* was named president with administrative and marketing headquarters in Elkhart.

Huse

Pillsbury

Metro-Atlantic, Inc, Centredale, RI, has announced two recent promotions.

George Huse has been named director of research and is in charge of the Research Laboratories. He has been with Metro-Atlantic, Inc since 1952 engaged in various phases of research and development.

Charles Pillsbury Jr has been advanced to the position of director of development and control, in charge of the Analytical, Control and Development Laboratories. He has been with Metro-Atlantic, Inc, since 1955 engaged in various phases of product development.

●

Stribling

Appointment of *Thomas E Stribling Jr* as director of research has been announced by Werner Textile Consultants, New York. He succeeds the late *Stephen I Rudo*, who headed the Wernertex research department in Larchmont, NY, during the past eleven years.

Mr Stribling joined Werner Textile Consultants in 1952, serving as a senior engineer on assignments in the U S, Canada and Europe. Prior to joining the consulting organization he was technical superintendent with Dan River Mills, Inc.

●

Howard S Bunn, president of Union Carbide Corp, was cited for his contributions to the chemical industry by Lehigh University on June 13.

He was given the honorary degree of doctor of engineering during the 92nd commencement exercises held in Grace Hall. *Martin D Whitaker*, president of the university, conferred the degree. Mr Bunn was presented for the degree by *Harvey A Neville*, provost and vice president of Lehigh.

Beane

Berkshire Color & Chemical Co has announced the appointment of *Allison F Beane* to head its Charlotte, NC, laboratory. During Mr Beane's 25 years in the industry he was affiliated with Southern Franklin Process Co, Dixie Mercerizing Co, and Pittsburgh Coke and Chemical Co.

Kenneth W Johnson, formerly with Althouse Chemical Co in Reading, Pa, joined Berkshire's sales force several weeks ago to represent the Company in Tennessee, Georgia, Alabama, and Mississippi.

●

Robert F Love has been named administrative assistant to *F A Gilbert*, manager of the Inorganic Chemicals Department of Food Machinery and Chemical Corporation. Mr Love previously was general operating superintendent at FMC's Green River, Wyo, soda ash operation. The Inorganic Chemicals Department comprises Becco Chemical, Chlor-Alkali and Mineral Products Divisions.

●

Douglas W Hill, one of the world's top-ranking textile research authorities, visited the School of Textiles at North Carolina State College the week of May 29. Dr Hill is director of the Shirley Institute for textile research at Didsbury, England.

While in Raleigh, Dr Hill conferred with the staff of the School of Textiles, inspected the School's laboratories, and reviewed the work of the college's Textile Research Center.

●

Chemistry awards were made to three Lowell Technological Institute students recently at the Institute's annual honors convocation.

The Chemical Rubber Company handbook, awarded to the student showing the highest achievement in chemistry during the first semester, was presented to *Thomas F Lynch*, a member of the class of 1962.

The Louis A Olney book prizes, in memory of the late LTI professor who founded the American Association of Textile Chemists and Colorists, went to *Jimmy Tee*, a junior majoring in textile chemistry, and to *Herbert Zaritsky*, a sophomore majoring in the same field.

Grant

Webb

Wolff

Douglas Grant has been assigned to the New York City sales force of Franklin Process Co, Division of Indian Head Mills, Inc. Mr Grant joins *Warren Cable*, manager, and *Byron Drumond* at the New York office.

•

Daniel B Lamb has been appointed Detroit division manager for Oakite Products, Inc. He replaces *Thomas R Smith*, who is retiring after nineteen years as head of the Detroit division.

Mr Lamb joined Oakite as a technical service representative in Knoxville, Tenn in 1947. For the past seven years he has served in the Kokomo, Ind area. In 1956 he received the Company's citation for distinguished service to industry.

H Allison Webb, sales manager—dyestuffs of the Dyestuff and Chemical Div, General Aniline & Film Corp, celebrated his 25th anniversary with the company at a luncheon given for him by 25 of his business associates on June 15th, at Cavanagh's Restaurant, New York.

Mr Webb started with the company in 1935 as a technical service representative with General Dyestuff Co's Service Laboratory. He later became a sales representative for the firm, until his appointment to branch manager of the Chattanooga office in 1954.

In 1957 Mr Webb was promoted to assistant sales manager-dyes, at the company's main offices in New York. He was appointed to his present position in 1959.

Putnam Chemical Corp has announced the appointment of *G A Wolff* as manager for polymer sales.

Mr Wolff was previosuly identified with the textile dyeing and printing industry in Paterson, NJ and also in the Grasselli, NJ, plant of General Aniline and Film Corp.

Mr Wolff joined Putnam's predecessor company in 1952 when certain polymers, such as polyisobutylene and the polyvinyl ethers manufactured by Badische Anilin- & Soda Fabrik, AG, Ludwigshafen a/Rhein, Germany, were first introduced into this market.

Mr Wolff's new assignment covers the supervision of the selling of polymers in Putnam's market in the United States.

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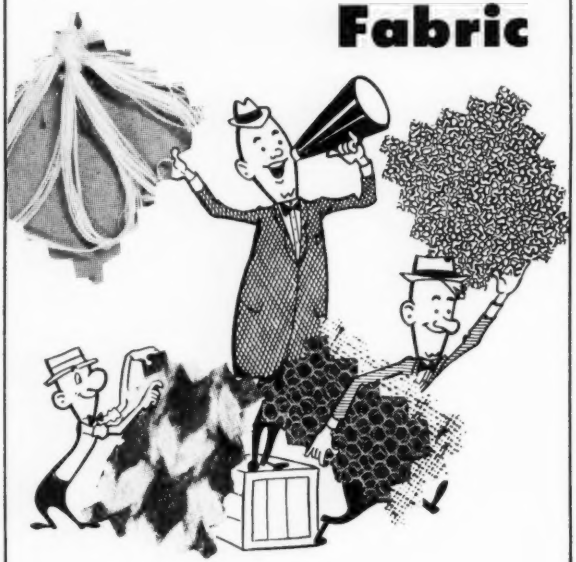

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Herman A Bruson has been named vice president for research of the Chemicals Division, Olin Mathieson Chemical Corp.

Dr Bruson, who was formerly director of research, organic chemicals, will report to the division general manager's office. A leading polymer chemist, he holds 290 patents in various chemical fields. He will be located at the corporation's new research center in New Haven, Conn.

Twelve additional appointments were made in the division's research operations. They are:

J B Andrews, administrative services manager; *W I Denton,* director, engineering services department; *J V Karabinos,* director, organic research department; *D W Kaiser,* manager, special chemicals section of the organic research department.

Also *A E Ardis,* director, polymers research department; *B H Wojcik,* director, inorganic research department; *A Pace Jr,* assistant director of the inorganic research department; *M C Metziger,* director, inorganic research department at Joliet, Ill, and *C S King,* associate director.

Also *R M Thomas,* director, industrial chemicals applications research department; *C M White,* manager automotive chemicals section of that department; *C W MacMullen,* director, special chemicals applications research department.

Former positions held by those named are:

Mr Andrews, assistant to the vice president, Energy Division; Dr Karabinos, associate director for organic research; Dr Kaiser, specialty chemicals section chief; Dr Ardis, polymers section chief; Dr Wojcik, manager of research and development for industrial chemicals; Dr Pace, manager of special projects; Mr Metziger, director of research and development for Blockson Chemicals (he also is director of the development department, Blockson); Mr King, associate director for inorganic research; Dr Thomas, chemicals research manager; Dr White, automotive research manager and Dr MacMullen, manager, organic chemicals research.

•

Maurice Rohrbach, Consul General of Switzerland in Philadelphia, spoke at a press conference-cocktail party held at the Hotel Shelburne, Atlantic City, NJ, during the recent American Textile Machinery Exhibition-International.

The party was given by exhibiting members of the Swiss Association of Machine Manufacturers Textile Machinery Group.

Mr Rohrbach was introduced by *S Remy,* sales director, Adolph Saurer Ltd, Arbon, Switzerland.

Harry D Armitage, left, retiring after 35 years as chemical salesman for Emery Industries, Inc, is presented with the Distinguished Salesman's Award by President John J Emery, right, while Executive Vice President A W Schubert looks on. Scene of the presentation was the annual award dinner of the Cincinnati Sales Executives Council.

OBITUARY

C M WHITTAKER

CROYDEN MEREDITH WHITTAKER, 82, died recently at Scarborough, England.

Dr Whittaker studied as a chemist at Leeds University, where later he had conferred on him the honorary degree of D Sc in recognition of his services to the textile industry. After working as a chemist with L B Holliday and Co and British Dyes at Huddersfield, he joined the board of directors of Courtaulds in 1920. After his retirement he was retained by the firm in a consultative capacity.

• PATENT DIGEST •

WRINKLE- AND SHRINK-RESISTANT CELLULOSIC TEXTILES——— Ethylene Urea Applied under Controlled Conditions G,2,04

PAUL WENGRAF

U S Pat 2,898,238 (Am Cyanamid Co—van Loo Jr, Salsbury—Aug 4, 1959)

Ethylene-urea-formaldehyde condensates frequently have been employed in the finishing of textiles. The present patent protects the application of these condensates under strictly controlled conditions, whereby superior shrinkage control and wrinkle resistance by relatively mild drying and curing procedure reportedly are obtained.

According to the current method, a cellulose-containing textile material is treated with the aforementioned condensate in a stable aqueous solution at a pH between 1 and approx 3.5, dried and cured at 235°F.

One mol ethylene urea is reacted with 1.5-3 mols formaldehyde at pH between 7 and 10 and a temperature between 40 and 100°C to form the dimethylol compound. Essentially water-soluble monomers result; however, a certain degree of polymerization is permissible, provided the mixture is substantially water-soluble. Then the pH is adjusted to 1 (preferably 1.5) to 3 with catalysts having ionization constants between 10^{-5} and 10^{-1}, eg, with acetic or phosphoric acids and many others or their ammonium salts (col 2, lines 39-44). Acids such as hydrochloric, sulfuric or nitric are not to be employed. pH values of 4 and higher were found to give inferior results under similar conditions. It is also important to incorporate at least 5% and up to 25% resin solids owf in this finish, because lesser amounts give insufficient wrinkle recovery.

Example: Cotton was padded in a 10% solution of substantially water-soluble dimethylol ethylene urea (DMEU) and sufficient H_3PO_4 to adjust the pH to 2.9. The cloth was squeezed to a wet pickup of 100%, dried, and cured at 225°F for three minutes. A comparative table (col 4, lines 5-10) shows that cotton treated with DMEU according to the new method has a wrinkle recovery of 241 (Monsanto crease angle tester) after three minutes' curing, while methylated methylomelamine, for example, produced the unacceptable figure of 175 under the same conditions of cure.

Among references cited by the Patent Office:

U S Pat 2,661,312 (Du Pont/1953) protects a finishing composition of dimethylol ethylene urea, starch and tartaric acid, which reportedly is stable in itself at temperatures between 165°F and the boiling point, but converted into insoluble form in contact with a textile material such as cotton. [Cf *Am Dyestuff Reptr 43,* 114 (1954)].

U S Pat 2,731,364 (BASF/1956) describes a process of impregnating textiles with dimethylol ethylene urea in the presence of an acid-hardening catalyst, such as $ZnCl_2$, NH_4NO_3 etc. [Cf *Am Dyestuff Reptr 45,* 348 (1956)]

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